FEBRUARY 10, 1923

# THE RUBBER AGE

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THE
RUBBER AGE

VOL. XII. FEBRUARY 10, 1923 No. 9

# What *about* the Philippines?

Yes, what about the Philippines? And South America?

Can we Americans grow rubber in these countries profitably? Can we get the necessary labor? Can we get sufficient land concessions? Can we interest ample capital for this purpose?

Do we want to control our own crude rubber supply? What are the chances of breaking the English grip on rubber?

This subject of growing rubber in the Philippines, in South America and other Latin-American countries has recently been agitated in many quarters and has attracted much notice in the public press. Mr. Firestone has appealed to the Government for action. Mr. Harding and his cabinet are reported to have given it consideration in recent Cabinet meetings. Mr. Ford's name has been linked with the discussion. Senator McCormick of Illinois has urged the Department of Commerce to study the subject.

With a view of presenting the various aspects of the situation in a clearer light THE RUBBER AGE will present in the issue of February 25 the views of several leaders in the field and expressions of opinion of others interested.

In addition an article will be contributed by a well known writer who has lived in the Philippine Islands for twelve years—a man who is thoroughly posted on conditions there.

# Our Rubber Latex Cover Stock

THE first commercial use by any publication in this country of paper with a rubber latex content will be made in the February 25 issue of THE RUBBER AGE. The cover of this number will be printed on a special rubber content stock made up especially for us by one of the leading American paper mills. In a short while we will also announce the date of one of our issues which will be printed entirely on paper containing a small proportion of rubber latex—both cover and inside stock.

# VARIOUS COMMENTS ON

## Mr. Hotchkiss on Rubber Restriction

### Statements of Mr. Hotchkiss throw light on American attitude of rubber restriction prior to consultation with representatives of British Rubber Growers

IN view of the importance of this subject at this time we are reproducing below the remarks of H. Stuart Hotchkiss, Chairman of the American committee to consider the Stevenson plan of rubber restriction, made at the recent annual meeting of the Rubber Association in New York. It is well to remember that these statements were made prior to the conferences since held in this country with the committee representing the British rubber growers.

Mr. Hotchkiss said:

One of the most important situations confronting the American rubber industry today is that of British Government restriction of exports, the terms of which are familiar to you all. The fundamental essential is that America should obtain its supplies of crude rubber at reasonable prices, not only now but in the future.

It cannot be denied that when rubber was selling at 8d or even 10d. the return to the planter was not sufficient to make it possible for many existing plantations to continue indefinitely. Furthermore, practically no new planting has taken place for some years, owing to the failure of this industry to attract new capital. Consumption is steadily increasing; herein lies the greatest danger of all.

Your Board of Directors appointed a Special Committee to study the problems presented by the adoption of restricted exports and upon the invitation of this Committee, the Rubber Growers' Association, London, is sending a representative delegation to the United States for the purpose of studying the situation and conferring with American manufacturers.

The planting industry knows that unduly high prices will curtail consumption and discourage new uses for rubber and American manufacturers understand no less clearly, that no greater menace can exist for them than a price level so low as not to support the planting industry and attract new capital for expansion. While the Committee of the Rubber Growers' Association has no power to abrogate or change the action taken by the British Colonial Governments, it is felt that any recommendations that they may make will carry great weight with the Advisory Committee appointed by the British Colonial Office in accordance with the Stevenson Plan.

Every effort is being made to either have restriction wholly abolished, on the ground that increased consumption no longer renders it necessary for the maintenance of a fair price level, or, failing this, to have the existing plan so modified that stabilized prices at a reasonable level will be assured beyond a doubt.

When this Committee arrives it is our plan to arrange a series of meetings. We expect to have meetings in New York, in Akron, somewhere in New England, in Trenton; and of course they may make other visits as well. By this means we hope to give every one in the Rubber Association an opportunity to meet them and express their views in an intimate way that they couldn't do at a general meeting of this Association.

We also hope that this Committee will carry away with them a picture of the American industry as it really exists. There is just as much misconception on the other side of the Atlantic Ocean in connection with our activities as exists here in connection with theirs. The British planter has felt for some time that the American manufacturer was his natural enemy. They have felt that we are all in one great consolidation, that we buy together and stay out of the market together as suits our condition and with utter disregard to their interests. This, of course, is just as absurd as it is absurd that the British planter has combined in this particular case to squeeze the manufacturer.

It is a situation that, I think, will be clarified by a frank understanding between each group, and we hope that the members of the Association will avail themselves of this opportunity to meet this delegation and to express themselves very freely in regard to any points or matters that may come up.

I have been asked to explain the basis on which the export is at present being worked, and I want to quote an extract from a letter that I received from Mr. Eric Miller, who is a member of this Committee, a member of the Stevenson Committee, and also is a member of the Government Committee. He says:

"I noticed in the special issue of the 'India Rubber Review' that some people read the Scheme as requiring a rise of 3d. per lb. (over ⅓d.) to enable each addition 5 per cent to be exported,

## RESTRICTION RULES AFFECT HOLDERS IN BRITISH MALAYA

***Small holders of rubber lands in the Federated Malay States are concerned over the working of the rubber-restriction enactment. They declare that enforcement of the present rules will ruin them financially, as the quantity of rubber they are allowed to sell is not sufficient to meet the expenses involved in the business. It is generally conceded that a small holder can produce much more than 350 pounds per acre annually, while the Duncan schedule sets 240 pounds as the maximum output of an acre of land having trees between 7 and 8 years of age. Under the terms of the act, the owner of less than 25 acres can not appeal against the decision of the district officers as to the amount he can sell, which is regulated by coupons.***

***The Straits Times, expressing disapproval of the Duncan schedule, says that small holdings, produce about a third of the rubber exported from Malaya, and advocates relaxing the regulations of the act pending an investigation to fix a rate of output which will give small holders a living wage.***

***A recent issue of the Malayan Tin and Rubber Journal states that the Government is watching the case of the small holder sympathetically, and that as soon as it is convinced that the rules are in any way operating more harshly upon them than the rest of the rubber-growing community, the Government will remedy the situation.***

# RUBBER RESTRICTION

thus arriving at a price of 3 shillings per lb. before a 100 per cent of standard production can be exported. I hope this fallacy has been knocked on the head. If the price is maintained at an average of ⅓d, the Scheme would be effective as follows:

| | |
|---|---|
| "November, 1922 to January, 1923 | 60 per cent |
| February, 1923 to April, 1923 | 65 |
| May to July, 1923 | 70 |
| August to October | 75 |
| November, 1923 to January, 1924 | 80 |

"If the price averages 1/6d in any quarter the increase is 10 per cent instead of 5 per cent, and if 1/6d average were maintained the first six months of the Scheme, it would give:

| | |
|---|---|
| "November, 1923 to January, 1923 | 60 per cent |
| February to April, 1923 | 65 |
| May to July, 1923 | 75 |
| August to October, 1923 | 85 |
| November to January, 1924 | 95" |

So that automatically with 1/6d rubber maintained you get practically the full production. We believe that there is absolutely no conflict of interest here at all. We believe that the British planter is anxious to see this restriction removed just as soon as it can be removed. We are bringing every pressure we can to bear to show that in the light of the increased consumption and the increased imports into this country, that restriction is no longer an economic necessity. If they fail to yield to that (as they probably will until they give it a trial of a few months anyhow), we want to have this scheme made more elastic so that prices cannot get away from them. What this Committee is particularly apprehensive of is that while they may be acting in good faith, economic conditions may create a shortage of rubber which will put the prices up regardless of this restriction scheme.

### *Discussion*

MR. S. G. LEWIS: Will you please express your ideas as to the average cost and what you consider a fair price?

MR. HOTCHKISS: It is very difficult to say what the average cost is. There is one thought that I would like to register on that. We must not be misled by individual costs of individual estates. That is a question in the first place of bookkeeping, and in the second place it is a question of isolated units. The thing that affects the price one way or another is not the individual but the average over the whole producing area.

The fact remains that with prices where they were at 8d or even 10d, there was no new money attracted to th industry. That is the yardstick we have got to measure by rather than by any theoretical set of figures. It is a practical condition, and it would seem to me that a situation is arising—and has already risen as a matter of fact—that is going to be very serious later on, because we have got a steadily increasing rate of consumption. We have no new plantings within the past few years to make up these additional requirements.

PRESIDENT DUNN: Mr. Hotchkiss is a little modest, so I would say for the benefit of the members that he is very familiar with the conditions in the Far East, having made many trips over the British possessions and other possessions as well. He is familiar with the conditions on many of the larger as well as the smaller plantations and the general labor conditions in the East. We are very fortunate in being able to select as Chairman of this Committee a man who has that firsthand knowledge and is also personally acquainted with the gentlemen coming over from the other side representing the Growers, and with many of the other leaders representing the government in this matter.

MR. HOTCHKISS: Mr. President, while it is true that I have spent a good deal of time in the East and studied the matter pretty thoroughly, it is an exceedingly complex proposition. Mr. Dunn and I are going down to talk with Mr. Hoover, Secretary of Commerce, at his own suggestion in regard to this matter. I want to emphasize the fact that we are doing everything we can to cooperate, not only with the planting interests but with the government, too, to secure the results that we desire—namely to get these restrictions removed and, failing that, to introduce more elasticity.

MR. KEARNS: What about the rate of wages in the East?

MR. HOTCHKISS: The rate of wages paid to the coolies increased materially during the war. Since then of course the wages have come down. They are down now to practically pre-war level. In Sumatra we figure that a coolie costs about 40 cents a day, including everything.

MR. KEARNS: I asked the question for the reason that undoubtedly wages have increased and are much higher now than when rubber was selling at $3 a pound. I happened to be in Ceylon in 1910. At that time rubber was laid down in Columbo for nine or ten pence a pound. At that time the coolies that Mr. Hotchkiss refers to only received about nine pence per day. As a matter of fact, that was some of the so-called "excessive wages".

This, of course, is a broad question, but those of us who have been in the rubber business for a good many years know that the condition is brought about largely by ourselves. When rubber was $3 a pound, buyers were trying to get it for $2.98. When rubber was 16c a pound the same pressure was brought to bear to get it down to 14c, and they would never have been into it only for the good judgment of the English planters who have taken a proper stand. They have contributed millions of dollars annually, supposedly to the rubber manufacturers of this country, but in fact to the public. The rubber manufacturers didn't have sense enough to hold on to some of the money they should have had as is shown by the reports of the various companies for the past two years. Rubber ought not to have been as cheap as it was in the past few years. An Englishman in a statement in an English Rubber Journal recently stated that they gave to the American manufacturers forty million sterling a year. They didn't do anything of the kind, but they passed it over here, and the rubber manufacturers passed it along to the public.

I heartily approve of the stand that they have taken and I believe that the rubber industry would be stabilized better if a price of about forty cents a pound was maintained regularly. That would give the fellows in the East a chance to make some money and also the rubber manufacturers. Those who have followed statistics know that for the past fifty years rubber has averaged about 75 cents a pound, and these big concerns that have grown big and powerful have done so when they paid high prices for their rubber. It was true that commodities were higher, but I believe that the trade was better stabilized. I believe we have had worse conditions in the rubber business since rubber became low than we ever had before.

## RESTRICTION HELPS REDUCE SURPLUS STOCK OF RUBBER

### *A Statement by* Zorn & Leigh-Hunt (London), *Jan.* 18.

Beyond all question the position of the industry has been immensely strengthened by the adoption of the Stevenson scheme; but the necessity for bringing that scheme into force is evidenced by the fact that the world's stocks of raw rubber as they exist today—after restriction has been in force for two months are still about 80,000 tons in excess of requirements; and if the measure were withdrawn tomorrow the price of rubber would almost certainly collapse. Too much importance, therefore, should not be attached to the arguments that are now being put forward on behalf of certain American interests that an artificial shortage of rubber will be created if the restriction measures are not immediately rescinded. The world's consumption in 1922 appears to have somewhat exceeded 350,000 tons, and as trade is increasing, the probable requirements for 1923 may perhaps be tentatively estimated at 370,000 tons. It may readily be admitted that, with the restriction scheme in force, production is not likely to reach that figure; it will, in fact, most certainly be under 300,000 tons. The avowed object of the restriction scheme, however, is to get rid of surplus stocks of rubber; and from figures we have cited it will be seen that this is effectively being done.

It cannot perhaps be too often repeated that it is no part of the Government plan to create an artificial shortage of rubber, or to raise the price above an economic level. As the Colonial Office have pointed out, the exportable percentage will be automatically raised by 5 per cent as soon as the price of rubber has been maintained at an average of 1s. 3d. per lb. for a quarterly period, and that when such quarterly average is 1s. 6d. or over, the exportable percentage will be raised by 10 per cent. The quarterly increases will be cumulative so long as the price is maintained at the given averages. The arrangement is distinguished both by its moderation and fairness as well as by its simplicity; it has tided the important plantation industry over a very difficult period; and it will not, we are sure, be withdrawn until the surplus stocks have been absorbed and the price of rubber exceeds 1s. 6d. Meanwhile the additional quantities that are automatically to be liberated, according to the needs of the market, are calculated to prevent the price rising with an unhealthy rapidity.

# VARIOUS COMMENTS ON RUBBER RESTRICTION

## "America's Position Not Likely to Continue"

### So Says "The Straits Echo" in an article entitled, "Restriction on Trial"—Restriction only temporary, to be shelved when aim has been achieved.

FOLLOWING are extracts from the article published in *The Straits Echo* in its issue of December 4, 1922, on the subject of rubber restriction:

"Quite a good case can be made out against the restriction of rubber exports based on the principle that official interference with the natural processes of trade is not calculated in the long run to promote the ultimate interests either of the industry to which it is applied or of the country in which it is adopted.

"This has been recognized from the first by the moderate advocates of the local restriction policy who justify the violation of the principle in the case of the Malayan rubber industry on the plea of special circumstances and regard it as only a temporary measure to be abrogated as soon as those circumstances have disappeared.

"Thus, a correspondent has drawn our attention to a lengthy article in the Stock Exchange Gazette which presents the case against restriction from the point of view of the British rubber manufacturer and supports it by arguments that appear to us to be fallacious and in some cases founded on incomplete knowledge of facts. For instance, great play is made with what we may call the American factor—the cognate circumstances that the United States consumes 75 per cent of the world's rubber production and that American manufacturing interests already possess, and are further planting up, large areas of rubber in the Dutch East Indies—and the conclusion is drawn that restriction will cause the Americans more and more to desert a market liable to be subjected to such extraneous influences and to rely upon their own resources.

"Well, first of all, it must be pointed out that *America's premier position as a rubber consumer and manufacturer is largely due to conditions which are not likely to continue indefinitely.* She came very late into the great War and it affected her but little, and she has been able, practically since 1914 to exploit the markets which the European notions have been obliged to neglect. *As Europe revives, so will its demand for rubber, and while the United States will probably continue to be the largest consumer, the figure of 75 per cent is pretty certain to be reduced.*

"At the same time, the threat that American manufacturers will extend their plantations in Netherlands India so as to render them independent of Malayan supplies, need not be taken too seriously. The American is not going to put all his rubber eggs into one basket, either British or Dutch; moreover, he is not so unreasonable as to regard a policy which aims at giving the planters of Malaya a fair price for their product as inimical to manufacturers.

"Another point that remains to be emphasized is that restriction is only a temporary measure, for many of its opponents argue as though it were intended to be permanent. When its aim has been achieved, it must be abolished; not just shelved, like the income-tax, but buried forever. This may be possible sooner than many people think."

## Rubber Export Coupons Defeat Purpose for which Intended

India Rubber Journal

*These are slightly reduced replicas of the coupons issued in Malaya under the Export Restriction Regulations.*

**Just how the scheme of issuing Export Coupons for rubber is working out has been brought to light in recent advices from the Far East in which it is claimed that these coupons are being bought and sold freely. Although this matter does not affect the total of rubber exported it does show how the larger growers are getting rid of a larger percentage of their production at the expense of the smaller grower.**

**Here is how the scheme is working, according to *The Straits Echo* of December 12, 1922: "The owner of a big estate goes to the owners of a number of little ones and buys up their coupons. Say they cost him at the rate of twenty cents a pound. At prices ranging for rubber he can produce a full crop and dispose of the balance over 60 per cent of standard production by using these purchased coupons, while the small holder sits and smokes and makes a living without working for it."**

# Some Phases of Automatic Process Control

*By* Herbert A. Clark, Ph.D.

*Physicist,* Taylor Instrument Companies, Rochester, N. Y.

*The following article originally appeared in the Journal of Industrial and Engineering Chemistry, (Nov. 1922) but for the purpose of being made more adaptable to the rubber chemist it has been revised by the author for* THE RUBBER AGE *with special additions made showing the uses of the Thermo-Tyme Regulator in the rubber industry.* EDITOR.

DURING the initial stages of the development of any process, its control is commonly a matter of close observation on the part of the operator, and of careful hand adjustment to meet conditions as they arise. In many cases frequent changes, sometimes radical ones, are

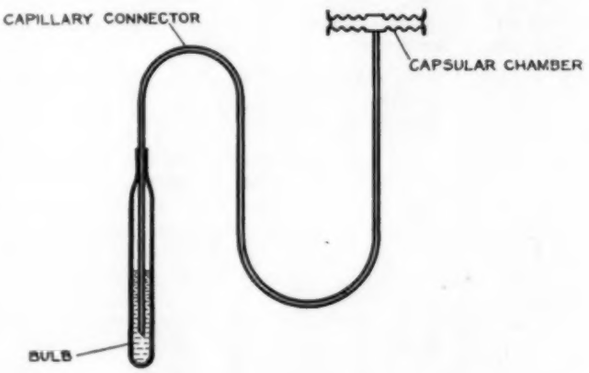



FIG. I DIAGRAM OF VAPOR TENSION TUBE SYSTEM FOR REGULATOR

made, as the operator learns what conditions are needed to produce the desired results in the most satisfactory way. As the steps become known, there is a tendency to standardize the process and to make the control automatic as far as it is practicable.

If the desired control is merely to keep temperature constant, some type of thermostat is employed. Many industrial processes of today require that the temperature be varied in a predetermined way over a specified length of time. To meet this demand, an instrument has been devised which will automatically vary the temperature of a container at any desired rate, either constant or variable; hold the temperature at any point (between certain limits) for any desired time;

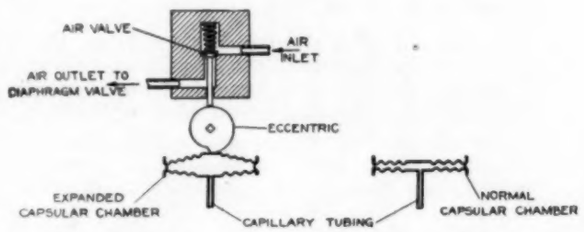



FIG. II—DIAGRAM OF CAPSULAR CHAMBER AND AIR VALVE

remove the condensation in case of steam-heated apparatus; cool the container at any desired rate at the end of the process; stop the process at any desired point, and signal this fact to the operator. This article will first briefly sketch the fundamental principles on which this device is based, then mention a few possible applications.

The sensitive member of this device (called a "Thermo-Tyme" Regulator) is a so-called *vapor-tension* system (Fig. I), consisting of a metallic bulb partly filled with a liquid, located in the container under control, and a metallic capillary leading from the bulb to an expansion or *capsular* chamber in the regulator case. As the temperature of the bulb varies, the consequent varying vapor pressure of the liquid inside is transmitted through the capillary to the capsular chamber, thus moving one face of the chamber, which in turn operates the control.

Fig. II shows diagrammatically the mechanism of the control. Suppose the temperature of a space is to be held above its surroundings—for instance, a steam-heated water bath at 175°F. As the temperature rises during initial heating, the capsular chamber expands until at 175° it has raised the air-valve plunger and opened the valve, thus letting compressed air pass through into a diaphragm which partly closes a valve in the steam line called a *diaphragm* valve,

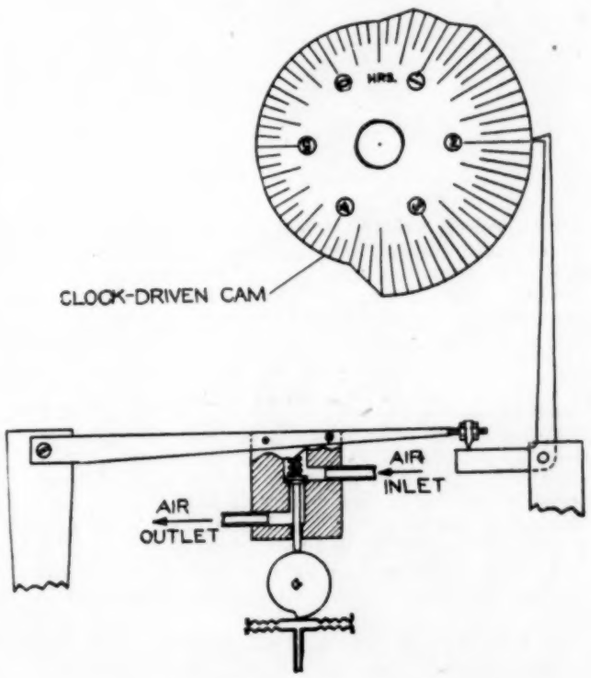



FIG. III SIMPLIFIED DIAGRAM OF THERMO-TYME REGULATOR

thus throttling the steam flow and keeping the temperature constant.

Suppose, on the other hand, that a space is to be maintained at a low temperature—a refrigerator to be controlled at 38°F. by means of cold water circulation. The same arrangement is used but with another type of air valve, one which differs essentially from the one mentioned above only in that the air passage is closed by expansion of the capsular chamber instead of being opened. As the circulating water lowers the temperature of the refrigerator, the capsular chamber becomes deflated. This opens the air valve (called

a *reverse action* valve as distinguished from the *direct action*, mentioned above) and the compressed air then partly closes a diaphragm valve in the cold water line, just enough to control the temperature. When using either of the air valves as indicated above, the control temperature is adjusted by hand by turning the eccentric (Fig. II). This obviously varies the distance from the plunger on the air valve to the face of the capsular chamber, thus varying the temperature at which the air valve will open.

So far, we have a mere temperature control. The added time control is accomplished by means of a cam rotated by a clock mechanism, which has the effect of turning this eccentric as desired, although actually it moves the air-valve block up or down instead, thus varying the control temperature. Fig. III shows this time control in simplified form. For instance, with a properly shaped cam, a certain process temperature was raised rapidly from 70° to 100° F., then at a rate a little less than 2° per min. to 170° F. in 45 min., then held constant at this point for 85 min., and finally dropped rapidly to 70° F. again. The rise can be made in successive stages if desired, as shown by the cam in Fig. III and by the temperature record in Fig. IV, although this particular cam does not correspond to this particular chart. Fig. IV is a copy of the record of a process control in which there was a rapid initial rise in temperature to 221° F., 10-min. hold at this point, rise to 247° F. in 5 min., hold at this point for 5 min., rise to 286° F. in 10 min., hold at this point for 1 hr. and 50 min., then a rapid drop to 160° F. in not more than 3 min. The temperature drop can be controlled in the same way.

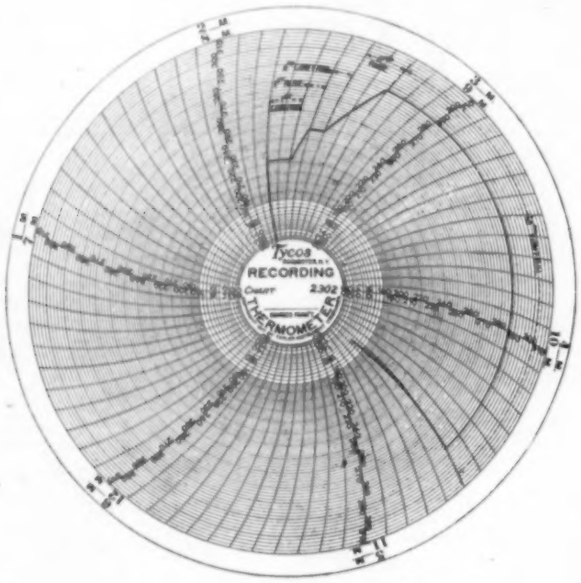



FIG. IV—RECORD OF PROCESS CONTROL

As developed at present, the Thermo-Tyme Regulator will operate between the limits +10° and +470° F., over a temperature range of from 60° to 150° F. for any one tube system, varying with the tube system used.

Fig. V shows the regulator complete with cover open. It will be noted that it has two cams instead of one, each with its own levers, valve, and tube system, one lever and cam being directly behind the other, and consequently partly hidden. One cam may control the temperature of the container, as indicated in Fig. IV; and the other, the discharge of condensed steam (if the container is steam heated). In addition, there is a third air valve operated by a trip (not shown) on the cam shaft, to completely shut off the heat supply and cool the container rapidly (by cold water spray if desired) at any predetermined time.

We have indicated in a general way some of the possibilities of this device. Having two cams, each with its own air valve and tube system, independent of each other except for a common cam axis and speed of rotation, and a third valve actuated by a trip when desired, gives great flexibility of adaptation as well as of control. Various attachments which make for convenience and accuracy of adjustment need not be discussed here.

### *Applications in Rubber Manufacturing*

The rubber industry is one in which the process is fairly well standardized. As is well known, however, the exact details of the process vary somewhat with the raw rubber used, with the article being made, and with the judgment of the chemist who has specified the process. The Thermo-Tyme Regulator is adapted to this control as far as the process is standardized, and is now in use in vulcanizing rubber boots and shoes, also automobile tires, especially the larger sizes, to give a uniform cure throughout the mass. One cam controls the temperature-time relations of the vulcanizer, the other adjusts the temperature at which the condensation is discharged.

In the following process details, the Thermo-Tyme Regulator is being used commercially in the rubber industry with success.

1. *For vulcanizing fabric tires*: Raise from cold to final temperature in from 3 to 5 minutes, then hold at this temperature for 1 to 2 hours, the exact time being determined by the chemist in charge, and controlled to within 1 minute.
2. *For cord tires*: Adjust the time of the initial temperature rise to from 10 to 20 minutes, and hold for 1 to 2 hours, the exact time being determined as before.
3. *For solid tires*: Use the step-cure method over a period of 2 to 5 hours, one particular record of which is shown in Figure IV, the exact times and temperatures again being specified by the chemist in charge.
4. In using a horizontal vulcanizer for tubes, the initial rise takes place in from 10 to 15 minutes, then the temperature is held for 30 minutes to 1 hour, according to specifications, each being controlled to within ½ minute.
5. When using a box type heater for rubber boots and shoes, the rise covers 6 to 8 hours, then the temperature is held for 1 hour or more, depending again upon specifications.
6. With a pressure type heater for boots and shoes, the rise takes from 2 to 4 hours, and the temperature is then held for 1 hour or more, according to specifications.
7. This device is also being used in a number of specialized applications such as the manufacture of mechanical rubber goods; or in general, wherever a rubber vulcanizing process can be standardized.

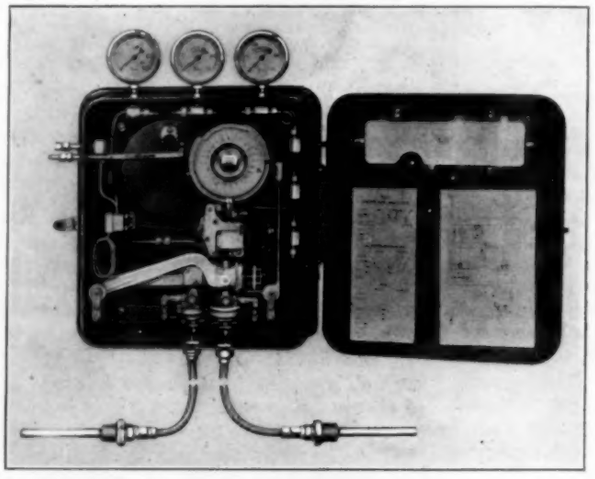


FIG. V—REGULATOR COMPLETE, COVER OPEN

# The Condition of Rubber in Its Solutions

## *Recent Laboratory Developments and Formulae of Value to the Rubber Technologist*

By Paul Bary, *Le Caoutchouc et la Gutta-Percha*, 1922, 11393-11395

Translated for THE RUBBER AGE by Ismar Ginsberg, B.Sc., Ch.E.

IT is well-known that rubber solutions have the property, in common with other aqueous colloids that swell up before dissolving, of giving extremely viscuous solutions at relatively small proportions of rubber. The cause of this has been attributed for a long time to the swelling of the individual particles of the rubber, which have, for this reason, a volume, that is sensibly greater than that of the original rubber. These granules are furthermore distributed throughout a liquid volume, which is much less than that which was used to make the solution, as the part that is absorbed by the rubber has lost its mobility.

The swelling of rubber is a phenomenon, which is admitted to be existant quite universally by rubber technologists, without there being any very real proof of its authenticity and particularly without anyone knowing just how great this swelling is. From a theoretical standpoint it has been established by Einstein that the magnitude of the viscosity of a suspension depends on two factors only; the viscosity of the medium, that is the solvent, and the volume, that is occupied by the dispersed material, that is by the colloid. Then if the relative viscosity of the suspension in relation to the solvent is designated by h and the volume that is occupied by the colloid in a unit volume of suspension is called v, then we have the following simple relation: $h = 1 + 2.5v$. (1).

This formula has been verified for the case of suspensions of materials in liquids, that is for those materials which do not swell up in the liquid, but it is not applicable in any way to the case of emulsions or aqueous colloidal solutions.

Hatschek has developed a formula for the viscosity h by other methods. This formula is given herewith: $h = \frac{A^{1-a}}{A^{1-a}-1}$ (2). In this formula A is the ratio of the total volume of the system to the volume of the dispersed phase. From this definition of A, we have that $A = \frac{1}{v}$ when the total volume is equal to unity. It is also evident that this formula (2), when expressed in the same terms as used by Einstein, will assume the following form: $h = \frac{1}{1-v^{1-a}}$ (3)

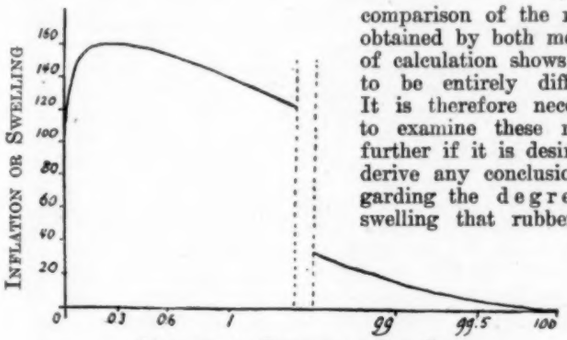
The formulae 1 and 3 are far from being alike. In the Einstein formula the viscosity increases with the volume v in a straight line relation, which does not agree with the case of rubber solutions, while in the Hatschek formula the viscosity increases at a much higher rate of speed than the concentration of the solution. This is more conformant with experience than the first approximation.

### *Formula for Viscosity*

In order to apply the Hatschek formula to a concrete case, as that of a rubber solution for example, it is necessary to know the volume of this dispersed phase, that is the rubber which is in the state of colloidal solution. Consequently it is also necessary to know the state of swelling or distension in which the rubber exists in the rubber solution.

It is possible to proceed in this manner. First, the viscosities of the solutions are determined by actual experimentation, and then from these results there may be deduced, by the aid of formula 3, the real value of v compared with $v_o$ of the rubber used to make the solution. These results have been determined and they give a value to the ratio $\frac{v}{v_o}$ which is about 160 at a maximum. This, then, means that the rubber in solution has a volume which is 160 times greater than the volume of the rubber used.

On the other hand, it has been shown (see *Comptes rendues*, volume 170, page 1,388 and volume 171, page 433, 1920) that it is possible to determine the degree of distension, in which rubber exists in the rubber solution, by the aid of the theoretical formula, developed by Einstein. This is a good basic formula on which the calculation may be built up, when it is assumed that the volume v in the formula is the volume of the swelled-up substance. Then when we call a the coefficient of distension or swelling, we have the following equation: $v = v_o(1 + a)$. Consequently, the viscosity formula may be written: $h = 1 + 2.5(1 + a)v_o$. From the latter we may then derive the following relation: $1 + a = \frac{v}{v_o} = \frac{h-1}{2.5v_o}$. The experimental data on the viscosity of rubber solutions may be used in this formula to calculate the ratio $\frac{v}{v_o}$. A comparison of the results obtained by both methods of calculation shows them to be entirely different. It is therefore necessary to examine these results further if it is desired to derive any conclusion regarding the degree of swelling that rubber undergoes in its solution, with benzene for example.



Volume of Rubber in Per Cent

In the Hatschek formula, the volume of rubber appears as a remarkably constant term starting with a concentration of 2.5 per cent. But, for concentrations lower than 2.5 per cent the values for v decrease rapidly and the formula does not appear to apply correct any longer. As far as the Einstein formula is concerned, it has been found that the formula holds good only for very low concentrations of rubber in the rubber solution. Above 3 per cent the formula fails.

The author goes on to describe certain experiments and mathematical calculations which show that within limits in which the two formula are deemed to be accurate, the results obtained for the ratio $\frac{v}{v_o}$ from the two formulas agree very well.

### *Distension of Rubber in Solution*

The important practical fact, that is derived from this theoretical discussion of the relation between the viscosity of rubber and the degree of distension of the rubber in solution, is that the distension ratio of about 160 at a maximum is quite considerable when compared to similar figures obtained with other colloidal solutions. For example, a solution of gelatine or glue at the same concentration as that, which gave the rubber factor of 160, will give a factor of 25 for the former. This means that the volume of the glue in the solution is 25 times that of the original substance before it was dissolved

in the water. At the same concentration night blue has a distention factor of only 4, that is the inflated volume in the colloidal solution is only four times of the original volume. Rubber in passing from the solid state to the pasty condition increases six to eight times in volume, so that the 160 factor is very great in comparison thereto. From this it may be concluded that, even if the rubber gel passes into the semi-liquid or pasty state, the distension of the rubber continues for still a long time when benzine is added a little at a time.

The inflation in volume, amounting to 160 times the original volume of the rubber, is attained only when the rubber gel has a concentration of about 0.63 per cent rubber, as above that concentration, the total amount of the benzine content, which is used only for the purpose of swelling up the rubber, will not be sufficient to reach the value 160. It has been proven by experiment that the inflation of the rubber volume commences to decrease when the concentrations of rubber in the solution increases from 0.5 to 1 per cent.

On the other hand, the swelling phenomenon also decreases as the concentration of the solid in the colloidal solution decreases. This inflation in volume finally becomes zero when the concentration of the colloid in the solution becomes zero likewise. The lack of experimental data, which falls in that part of the curve does not permit us to verify this assertion, especially in the special case of rubber solutions, but it does not seem likely that the swelling finally becomes nil, for the extremely dilute solutions of rubber behave as if the substance in solution were combined with the solvent itself. When these solutions are evaporated, it is found that the solid substance is not recovered in the original state, that is in the condition in which it was dissolved at the outset.

If the degree of the swelling of rubber is represented as a function of the quantity of benzol, which is employed to make a total volume of 100 units, then the following curve is obtained. As may be seen, this curve is formed of three distinct parts. The first part consists of the very weak concentrations of the rubber solutions, varying from zero to 0.3 per cent of total rubber in solution. This part of the curve shows a rapid increase in the volume inflation of the rubber to the maximum point of 160. From this point there is a gradual decrease in the swelling of the rubber. The swelling phenomenon is manifested in its maximum degree between the concentrations of 0.3 and 1 per cent. In the third part of the curve, the volume inflation is seen to decrease rapidly until finally it reaches zero at a concentration of 100 per cent rubber.

It is evident that the figures, which are given in the graph, are not absolute values, the degrees of inflation depending not only on the rubber used and on the liquid in which it is dissolved, but also on the manner in which the solution is made. It is known as a fact that the more the solution is worked mechanically or the longer the duration of time in which it is heated and the greater the viscosity of the solution, then the less the swelling or distension of the particles of rubber will be. This phenomenon admits of easy and satisfactory explanation through the fact the mixing of the rubber results in the breaking up of the granules of rubber into particles of increasing fineness. The depolymerizing effect which is secured in this manner is felt in a reduction of the inflation of the rubber particles.

This so-called deflation works spontaneously, as we have just seen, in those parts of the curve where the concentration of the rubber in the solution is very small. When the concentration of the rubber is greater, if the depolymerizing effect is brought about by prolonged mixing of the rubber, then there is obtained a solution which is entirely liquid, a phenomenon which is quite well-known to rubber technologists. Technically it is said that the rubber has been "killed." Experiments have shown that particularly a solution of rubber, made in the normal manner, in the proportion of one per cent in benzine is more viscuous than a similar solution, at a concentration of 10 per cent, which has been maintained at the boiling temperature for a period of twenty-four hours.

In all the discussion which has preceded, it has been assumed, as is generally done, that the solution of rubber was constituted of granules of the solid substance held in suspension in the solvent, there being no other bond between them. This hypothesis results in the additional conception that the solution, even though viscuous, is none the less absolutely liquid, that is it does not possess any rigidity. Now it is known that colloidal emulsions possess, on the other hand, an appreciable rigidity. This must be laid to the fact that there is undoubtedly a lack of mobility in the granules, held in suspension, that is they are not so free to move among each other.

### *Conclusions*

The discussion of the results obtained by the mensuration of the viscosities of solutions of rubber and the interpretation of these results lead to the conclusion that these solutions are more or less liquid jellies, up to a concentration of one per cent rubber in 99 per cent of benzine, this concentration varying with the quality of the rubber and the nature of the solvent.

In the case of rubber solutions, which are still more dilute, there is found a still smaller sub-division of the particles of the jelly and the degree of inflation in the rubber particles begins to decrease in the same measure as the depolymerization increases.

# Commercial Items

## New Rubber Company in Brazil

Rubber goods are now manufactured by S. A. Somell, of Rio de Janeiro. Among the products of this plant are rubber soles and heels, rubber sheets, and nonstretching rubber belting for transmission purposes.

## Rubber Goods for South African Mines

The noticeable improvement in the South African mines is likely to cause an increased demand for mining supplies, including belting, hose, and other mechanical rubber goods. The various supplies purchased by the mines in 1921, include belting, £190,897; hose and fittings, £134,044; packing, £57,-120; rubber boots and waterproofed clothing, £31,011.

## Medan Rubber Already Contracted For

ALL but two of the Medan rubber exporters either already have regular agents in the United States, or find it impractical to extend their list of buyers in the United States on account of the difficulty of obtaining the product. Most of the rubber is already contracted for.

## Venezuelan Exports of Rubber and Balata

DURING the first six months of 1921 Venezuela exported 538 metric tons of balata valued at about $540,000, as compared with 781 tons valued at about $830,000 in the same period in 1920. For the six months ending June 30, 1921, exports of crude rubber fell to 23 metric tons valued at about $17,000 as against 97 tons valued at about $45,000 in the corresponding period in 1920.

## Tennis Balls in Australia

FOLLOWING the establishment by the Barnet-Glass Rubber Co. of a new department for the manufacture of tennis balls, the Australian press has started a campaign in favor of the local product. Hitherto Australia has imported large quantities of tennis balls annually, mostly from Great Britain. The Dunlop Rubber Co. of Australasia (Ltd.), which has been manufacturing tennis balls since 1910, reports the sale of 296,772 tennis balls in 1921, and contests the estimate of sports goods retailers in the Commonwealth that not over 30 per cent of the tennis balls sold there are of local manufacture.

# SCIENTIFIC MANAGEMENT FOR RUBBER MANUFACTURERS

## The Reconciliation of Costs—XV.


### By Alfred Baruch

*Consulting Industrial Engineer, New York*


HAVING provided for the various elements of cost and their collection within their respective groups. It is now necessary to bring these elements together so that the cost system may function as a united whole. Before going on to the method by which this reconciliation of the elements of cost can be brought about, it is well to recall the functions of a cost system. These are:

a. To determine the cost of the product.
b. To form the basis of future estimate.
c. To eliminate waste.

When considering these functions, in connection with rubber manufacturing, it will be seen at once that because of the nature of the work, the order and importance of these functions is necessarily changed. In straight manufacturing the chief function of the cost system is to determine the cost of the product, as this cost will necessarily form the basis for the price. But when the work is on a jobbing basis, as is the case with orders for mechanical goods, to a large extent, and in some shops even with tires and tubes, establishing the basis for future estimates becomes of primary importance, since the price must be named before the work is actually done. By establishing predetermined rates of cost based on the experience of previous jobs, the rubber manufacturer is in a position to build up a set of records upon which he can draw whenever he is estimating on a new order.

Unless he does this, the manufacturer will be forced to get at an estimate by guessing. By this I mean that a man must have an effective cost system or else he will have to guess at the cost of his labor, material and the amount of burden which each order must earn for him in order that he may continue to replace the money he has expended and still make a profit. Unfortunately, guessing is the prevailing custom in rubber manufacturing. In my experience with factories of this sort, not more than 10 per cent know the cost of production. I know that a good many manufacturers pretend to have the cost figures in their heads. But the truth of the matter is that they rely on competitors to fix the price which they will underbid when the opportunity presents itself.

Guessing is certainly true of labor cost. Nine factories out of ten have no accurate knowledge of the cost of labor and of what may be reasonably expected from each productive unit. Yet there is hardly another industry in which the value of the product is enhanced by labor and machinery to the same degree as in rubber manufacture. In other words, the manufacturer relies almost entirely on his own experience or his observation to tell him the length of time that is required to produce the various components of rubber parts although the only thing he has to guide him is final results. When it comes to factory burden, the rule is guesswork pure and simple, since the manufacturer has neither a market report on the cost of rubber and fabrics nor the pay roll and production reports on the cost of labor to guide him in determining how much burden to allot to each department. He usually applies a rough average in an improper manner on the theory that any way of getting the burden back is right as long as it comes back. If he has guessed wrong at the percentage or applies it to the wrong article so that he must sell below what he considers his cost or not at all he makes up the difference out of his pocket and lets it go at that.

### *Guess Work Is Wasteful*

This method is obviously wrong. It is similar to the trial and error theory which is always stupid and which has been the greatest single handicap to industrial development in this country's history. It is similar to the theory that a child must always burn his fingers before he can learn that he must not go near the fire. By this system, in order for a manufacturer to avoid making mistakes in fixing his price it is necessary for him first to make mistakes on every kind of work he has undertaken.

The manufacture of ordinary tires and tubes and other standard rubber products is very complicated. Add to this the complication due to special orders and you can see at once the dangerous ground on which the unscientific manufacturer stands. This may have been very well as long as none of the manufacturers had turned to science as a solution for many of their industrial problems. But practically all of the large companies have, and even a very casual examination will show that the most powerful are the most advanced in this respect.

The usual rejoinder to this criticism is that prices are really fixed by competition and not by the cost system. If this were true there would be a steady downward movement in price until it reached the point somewhere below the cost of production, and everyone would lose money. This defeats the purpose of going into business and it would soon pay the manufacturer to shut up his shop and work for someone else. This is what actually happens. There is a terrific mortality in rubber enterprises every year, as government statistics show.

In examining the records of cost over any period of time, the manufacturer is interested in two things: the cost of the job compared with the estimated cost; and the total shop cost for the month or the week, analyzed by separate items of expense so as to give him an idea of the increase or decrease in shop cost and to point out in his estimate those figures which were too low or else to discover the mistakes or action in the process of manufacture which made the cost fall below the estimate.

There are two general sources of information in the system outlined in the preceding chapter. One is the cost record; the other known as the "Monthly Comparison of

### *USE OF PREDETERMINED BURDEN FIGURES*

IN this article, the last of this series by Mr. Baruch, the author discusses several phases of various cost items. What is the function of a cost system? To determine waste, to form the basis for estimates, or to determine the cost of a product? Guess work is entirely eliminated by the proper use of cost figures thus allowing the manufacturer to be governed by his own production costs rather than by his competitors list. It is not true, states the author, that prices are entirely fixed by competition for if this was a fact then prices would tend to recede below production costs and every sale would be made at a loss. The reconciliation of costs is thus brought about through the use of a summary of the original cost records.

Shop Costs," showing the hours of work and the amount paid to labor, as well as the material charges against production orders, when the rubber or the fabric leaves the store room. The uses to which this record can be put is described a little later.

However, before going into this description it is necessary to consider the means by which the information appearing in this record is collected. The system which has been recommended as the one best suited for a rubber factory is the production order method for controlling output. By this method production for a week or month is marked off by a production order which instructs each department on what it is to do and identifies the work for that particular period with an order number.

The system of numbering production orders was described before. Orders issued to all departments applying to the same lot of tires or tubes or belts or whatever the order may call for bear the same order number when labor time is charged to each department, and when fabric or rubber is withdrawn from storage. The material is withdrawn on requisition and this requisition is turned over to the cost department as soon as the storekeeper has made the necessary changes in his record. In the same way the labor reports are turned over to the cost department as soon as the payroll department has credited each man with his time. The requisition and labor reports are filed under the order number until the time comes to cost the job. This system works just as well in those departments where men operate the gang and turn in one labor report for the gang just as when they work singly. Men operating in gangs will naturally all work on one job at the same time.

We will assume that production orders are costed once a month. When this is done all labor reports charged to one order number are extended and totaled, and entered on the production order in the labor column. All fabric, gum, and other materials are totalled to the requisition against this order number and entered in the necessary column. The labor reports will show the length of time this job took to pass through each production center or if the unit system is used, the number of units produced. For instance, ten thousand tires are multiplied by the predetermined rate for each department through which they pass in order to arrive at the burden for the job.

The fact that the predetermined rate is used does not mean that actual expenses are not collected. An expense file indexed by expense order numbers, similar to the production order file is set up in which all reports for indirect labor and all requisitions for supplies are collected. Any repairs made by the regular working force are reported on the usual job form but charged to the proper expense order numbers. The labor and material charges are totalled in the same manner as the production labor and material charges.

### *Monthly Comparison of Job Costs*

All the elements of cost have just been collected and distributed to their various concentration points. If it is found desirable a comparison may be made monthly of the production orders with the cost that was predicted for them. This is brought about through the form known as the Monthly Comparison of Job Costs. This form is divided into columns headed: Order Number. Name, Sales Profit, Loss, Labor, Cost, Material Cost and Indirect Cost. The columns headed order number should contain the production order number of the job. The column headed description should tell briefly the nature of the product indicating the sizes if possible. The column for sales should contain either the estimated or the actual sales of the month if the comparison is made by the month. The profit or loss in this case is the difference between the sales figures and the total labor, material, and burden cost. The last three items are each subdivided in columns headed Actual and Estimated for the actual and estimated cost of the order. This sheet is a summary of the production orders described earlier in this article. The indirect expense here is based on the predetermined rate of expense and not upon the actual figures as indicated by the cost ledger.

In a plant that does straight manufacturing it is possible to begin all new jobs on the first of the month, and to have them run a full month. But a plant that does a jobbing business as well cannot do this and therefore the report will show only that portion of the job completed during the month. Similarly all jobs that are finished but not started in the same month must be represented by the value of the work completed during that month.

By this method the profit or loss on work-in-process is projected so that the manufacturer can tell whether or not he has made money on each lot that comes through. The profit or loss on the factory as a whole will be taken care of in another manner. But the prime cost necessary in this report can be obtained through production orders and through the predetermined rate established by the burden statements.

### *The Monthly Comparison of Shop Costs*

However, this method shows only the profit or loss on each order. The total profit or loss is determined in the following manner: All expense accounts as shown by the cost ledger are closed and carried to a form known as the "Monthly Comparison of Shop Costs." One of these reports is made out for each production center or department, according to the size of the factory. If the plant is small, a department may be taken as a production center.

The form is a ruled columnar sheet headed in the following manner: Items, Current Month, Average Month, Increase, Decrease. The items are divided as follows: Labor—foremen, inspectors, general help, and clerical help; Maintenance and Supplies—repairs to machinery, repairs to tools, benzine, waste, oil, and miscellaneous supplies; Apportioned Expenses—rent, insurance, taxes, depreciation, interest on investment, and general expenses. These items are totalled and then divided by the number of units produced during the month to determine the burden per unit.

Those departments that have a variety of products cannot determine the burden per unit in this way. They must divide the total expense for a production center by the number of hours it operates thus reducing the burden to an hourly basis. The burden per unit is then determined by dividing the hourly burden by the units of each kind produced per hour.

For illustration, we will take a mill. Let us assume that the burden per hour per mill is $1.20 and that the mill under consideration mixes only three kinds of batches, the first of which requires 20 minutes per batch; the second, 30; and the third, 40. This means that three batches of the first kind can be mixed per hour, two of the second, and one and one-half of the third. The burden per batch will be 40 cents for the first kind, 60 cents for the second; and 80 cents for the third.

This establishes the unit burden cost. To return to the monthly comparison, the average expenses are shown on the same line with the current expenses in a parallel column. For example, the average wages of the foreman are entered opposite that item on the sheet. If the wages for the current month are in excess of the average wages the increase is noted in the column to the right. If wages for the current month are less than the average, the decrease is noted in the column to the right of that. The same practice is followed with all the items on the sheet. The total items are entered on a second sheet which is known as the "Summary of Departmental Costs."

If the analysis is made by production centers then the totals for each production center are entered under the headings: Center, Current Month, Average Month, Increase, Decrease. The total of the individual reports makes up to total shop burden, to which is added the direct labor cost as shown by the pay roll, the material purchased this month as shown by the purchase book, and the inventory on hand at the first of the month as shown by the stock records. These are totalled and the inventory at the end of the month is deducted. To the net shop cost is added a list of the offices' expenses such as executive salaries, clerical salaries, office supplies, traveling expense, advertising, commissions, association dues, printing and stationery, telephone and telegraph, and miscellaneous expenses. This is the total operating cost to which is added the selling expenses and the total is subtracted from the sales for the month to determine the manufacturing and selling profit for the month.

The following method is used to determine the extent to which the burden charges were met during the month: We will assume that this plant operates on the basis of production centers, although the same principle can be applied to the departmental system and to the plant as a whole. The unit burden having been determined in the manner described above, the burden that each production center earned during the month is found by multiplying the produced units by the rate per unit. The result is compared with the predetermined burden for this center in order to determine whether the normal burden has been earned or not.

For example, assume that a mill operating as a production center runs 300 hours per month. At the rate indicated above, this mill should earn $360. per month. That is, this mill working 300 hours produced 270 batches of the first type thus earning $108; 180 batches of the second type, thus earning $qpi.; and 140 batches of the third type, thus earning $112. This shows a total burden earning for the month of $328. leaving a deficit of $32. which must be carried to the burden account in the cost ledger and charged against the excess earnings of other months. This method shows whether the production center has earned its expenses as well as the whole plant.

Office expense is treated in a similar way. Actual office expense is compared with the predetermined expense, that is, with the figures obtained by multiplying the net shop cost by the rate allowed for office expense. If the net shop cost for the month is $15,000. and the predetermined rate of office expense is 10 per cent, the office expense earned for the month is $1500. while the actual office expense may have been more or less. The difference between the two is carried to a reserve account where the losses of one month are deducted from the gains of another to maintain an average earning.

***Summary***

The reconciliation of costs is brought about through the summary of the original cost records. By reducing the burden to a unit basis, it is possible to obtain a complete statement of the cost of all work done during the month by bringing all production orders together on the "Monthly Comparison of Job Costs" form. The burden for each production center is found by making a monthly comparison of burden which can be reduced to a unit basis by finding the hourly burden and then dividing this figure by the hourly production for each product. The plant burden is found by totalling the individual burden reports.

In closing this series, I wish to point out that the best way to introduce betterment methods in a plant is to make a complete analysis and classification as was suggested in the early part of this series. Then install a cost system to locate the leaks and unnecessary expenditures. The cost system will also serve to clarify the problems and when intelligently planned should furnish most of the records for scientific management. The mechanical improvements should be made last when the effect of each additional expenditure on the cost is well understood.

Plants producing more than 15,000 tires per day or a corresponding quantity in any of the other rubber products should be able to keep an engineer on the premises at all times, devoting his entire attention to making improvements and eliminating waste. The smaller plants should seek outside assistance as it is not likely that they will be able to employ a man for this work permanently.

MONTHLY COMPARISONS OF JOB COSTS

| Order No. | Name | Sales | Profit + Loss − | Labor Cost | | Material Cost | | Indirect Expense | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Actual | Estimated | Actual | Estimated | Actual | Estimated |
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FIG. 1—THE PROFIT OR LOSS ON EACH JOB IS COLLECTED ON THIS SHEET

## Rubber for Repairing Concrete Roads

THE Bureau of Public Roads of the United States Department of Agriculture has been carrying out some experiments which have proved very successful. Many of the main roads in the United States are laid with concrete, and a serious drawback to motorists is the discoloration caused by filling in the cracks with fillers which form unsightly black lines. The bureau has tested certain fillers and has adopted a mixture which consists of approximately 12 parts of resin and 1 part of crude rubber, with sufficient barium sulphate to give the desired color.

In the preparation the rubber is dissolved in gasoline or naphtha, and the resin is then mixed in and coloring matter added as required. Any desired consistency can be obtained by varying the proportion, and as this material sets the same color as concrete, it will fill in the cracks and joints and give the surface the appearance of a continuous and unbroken slab. This idea might be experimented with for laying a continuous surface.

## British Round Heels Six Cents a Pair

(By U. S. Vice Consul Howard Donovan, London, England)

THE sale of American rubber heels in the United Kingdom presents difficulties, and practically no continental heels are sold here. The round heel is used on many shoes in this country. This type is retailed in some cases as low as 6 cents per pair. It would not pay American manufacturers to produce this style of heel for the British market, as they would be unable to meet the price of the English product. The American style of British-manufactured heel retails for about 25 cents a pair, while heels imported from the United States retail at more than double this price. There are scarcely any shoe factories in this country putting on rubber heels at the time of manufacture, but an effort is now being made to bring this about. An extensive advertising campaign recently conducted by American manufacturers of rubber heels met with poor results, chiefly on account of the high price of the American product.

*(EDITOR'S NOTE—In the United States several large variety chain stores are retailing black rubber heels at ten cents a pair.)*

# ITEMS FOR THE RUBBER CHEMIST

## Hard Rubber Substitute

A substitute for hard rubber is made from pyromucic acid by treating acid under pressure with concentrated sulphuric acid, hydrochloric acid, phosphoric acid or mixtures thereof in the presence of phenols or oils containing phenols, cresol and similar substances, in accordance with German Patent No. 343,365. The product obtained is very resistant to alkalies. The addition of formaldehyde improves the product.

## Rubber Vulcanizing Process

In the United States Patent No. 1,413,813, which is assigned to the Dunlop Rubber Co., there is described a process for the vulcanization of rubber in which certain substances are added to effect acceleration of the same. It has been found that caustic alkali can be introduced into the rubber mixing by the aid of other organic hydroxyl compounds, such as phenol. The caustic soda may be added directly to the solvent, or else the corresponding alkali metal may be dissolved to give similar results. About 10 parts of potassium hydroxide or equivalent quantity of metallic potassium can be used in 100 parts of phenol.

## Moisture in Smoked Rubber Sheet

By the determination of the total loss sustained by smoked rubber sheet on drying in a dessicator, and the increase in weight which results on exposure of the dried rubber to the air for a period of 24 hours, it was found that the latter—which may be called the surface humidity—is equal to three quarters of the total amount of moisture contained by the rubber, which is about 0.5 per cent. The property of opacity is not necessarily characteristic of an abnormally high internal moisture content in the smoked sheet. Although moist rubber is apparently more subject to the development of rubber molds, this is due primarily not to the presence of moisture in the rubber but to the fact that the substances, that bring about this action, exert their deleterious influence on the rubber more effectively when moisture is present. The presence of moisture in the rubber sheet has no apparent action on the vulcanizing properties. See *Agricultural Bulletin F.M.S.*, volume 9, page 79.

## Cellular Rubber Products

It has often been desirous of making a rubber product, which contained a mass of rubber cells, so that extreme lightness and other advantageous properties are secured. A process of making such cellular rubber products is described in British Patent No. 185,477.

A mixture of raw rubber, sulphur or other vulcanizing agents, and finely pulverized charcoal is shaped into the desired form and treated under high pressure in a jacketed vessel. An inert gas such as nitrogen is used to produce the pressure, whereat the gas is acculded in the particles of charcoal without changing the size of the mass in any way. The material is vulcanized while still under pressure, and subsequently cooled by the admission first of steam or hot water, and then of a cooling medium into the outer jacket. The pressure is then reduced to one atmosphere and the material is again heated, whereby the occulded gas is liberated from the particles of charcoal, causing the mass to assume a cellular structure and swell up.

The manufacture of hard cellular masses is carried out by using Para rubber and an excess of sulphur, and only carrying the vulcanization at first to the stage at which a soft, cellular rubber is formed, this being hardened afterward by continued heating. This may be done in a press if smooth boards are required, which may be used for example in the lining of refrigerators. In the manufacture of tire fillers and the like, the original mixture contains balata in addition to Para rubber, and fibrous filaments run through the material from end to end to facilitate contact between the gas and the charcoal. The final heating is performed with the tire mounted on a rim.

## Tennis Balls

An ingenuous method of making tennis balls, whereby the necessity of reinflating the same or using a raw gum plug, is avoided, is described in United States Patent No. 1,415,437. This patent has been assigned to the Revere Rubber Co. A rubber composition is made containing a definite amount of chemicals which are caused to react by the heat of vulcanization as the ball is being molded in the mold. A mixture of any ammonium salt and any nitrite giving nitrogen is used for this purpose. Ammonium sulphate and sodium nitrite is used. The proportions are properly chosen so that reaction is complete and not too much gas is generated. The size of the ball is kept within a definite limit by the application of external pressure to the mold during the manufacturing process. Other substances, giving rise to the evolution of different gases, are also used for this purpose, such as sodium peroxide and water, or just peroxide of hydrogen alone. The chemicals are introduced into the center of the rubber mass in the form of a gel.

## Determining the Sulphur in Rubber

The determination of the sulphur inorganic compounds and in technical products, such as rubber, is the subject of an article which appeared recently in Rec. Trav. Chim. Pays-Bas, volume 41, page 112 (1922). The method consists in heating the substance, containing sulphur, in a current of hydrogen until the volatilization or decomposition is complete. The gas is then made to pass over heated platinized asbestos, which converts all the sulphur into sulphuretted hydrogen. The latter is then absorbed in alkaline solutions and determined volumetrically by the iodine method or colorimetrically by the aid of sodium plombite. Too large a sample should not be used. In order to make sure that the combination of the sulphur with the hydrogen is complete, the heating must not be carried out too rapidly and the current of hydrogen gas must not pass through the apparatus at too high a speed. The activity of the catalyst generally diminishes due to a deposit of carbon, and it is accordingly advisable to burn this coating off before each use of the catalyst. The method is especially applicable to the analysis of rubber. About 10 milligrams is an average sample, mixed with an equal amount of borax.

## Balloon and Airship Fabrics

One of the essential properties of balloon and airship fabrics is their impermeability to air and gases. As hydrogen, the gas which is used to fill balloons, is the lightest substance known and also the most readily diffusible the fabrics must be very carefully made to prevent this gas from leaking through. The process, described in United States Patent No. 1,407,197, which is assigned to the North British Rubber Co., is concerned with the use of gelatine in conjunction with rubber for coating the balloon fabrics. The gelatine is rendered insoluble in water by any of the many known means of accomplishing this. The textile fabric may be impregnated with the composition or a layer of gelatine and rubber composition may be inserted between the different piles of the textile fabrics. The gelatine may be used alone or else it may be mixed with rubber oil, cellulose preparations and the like and pigments. A very impervious balloon envelope is thus obtained.

# NEWS OF THE INDUSTRY

## RUBBER COMMITTEES CONFER WITH HOOVER IN WASHINGTON

*After Visiting Trenton, Akron, Detroit and Buffalo the American and British Rubber Committees Journey to Washington and Hold a Conference with Secretary Hoover on February 3*

NEW YORK, February 5, 1923—The long awaited conference with Secretary Hoover and of the two rubber committees considering the problem of rubber restriction and its effect on American manufacturers was held in Washington on Saturday, February 3. In conference with Secretary Hoover were Messrs. Hotchkiss and Viles representing the American committee, and the three members of the British Commission. In attendance also were Mr. Palmerton of the Rubber Division and Asst. Secretary Huston.

After stating that he did not advocate Governmental intervention with foreign agriculturalists, Secretary Hoover announced that he would recommend a special appropriation to enable the Department of Commerce to make an exhaustive investigation of territories throughout the world capable of rubber production, with particular reference to land and labor laws, transportation, production costs and security of investment.

Even with an abandonment or modification of the present restriction on the production of rubber Secretary Hoover stated that the United States faced a shortage of crude rubber within a short time if consumption continues at only half the present rate of increase.

The British representatives explained the recent legislation in the British Colonies in restriction of rubber production and price control as having been necessary in view of the practical collapse of the industry, due to prices below cost of production, and stated that their objective was to establish a price under which reasonable returns could be secured and the necessary expansion in rubber plantations obtained in pace with increasing world demand.

The American consumers representatives stated that they were equally desirous of securing a fair return to the producing industry but were fearful that the restriction plan adopted might at times stimulate speculation and runaway prices which would in the end be disastrous to the British producer by again stimulating over production with ultimate collapse in prices, and at the same time work great harm to the American consumer through speculation and losses.

Secretary Hoover stated that the mutual interest of both producers and consumers was a stable market at reasonable prices and the elimination of speculation. He was sure that increasing demand for rubber during the next ten years, if it proceeded as rapidly as during the past ten years, would overtax the possibilities of the British production even without restrictions and that expansion of rubber production in other parts of the world was necessary; that the American Government was anxious to see such expansion in all countries as would insure the meeting of American demands and the maintenance of reasonable prices. The British representatives stated that they felt their associations would do all in their power to prevent runaway prices.

In a letter to Senator McCormick, of Illinois, Secretary Hoover explained his position in the matter and stated that he planned to obtain the appropriation as already stated above. This letter appears in full below.

### COPY OF LETTER TO SENATOR McCORMICK

February 2, 1923.

The Honorable Medill McCormick,
United States Senate.
My dear Senator:

I am greatly obliged for your letter of January 24th touching upon the promotion of Latin American trade and the the present situation with regard to our national supplies of crude rubber. The former has been under energetic promotion by this Department so far as its resources will permit. The latter has received our concern even to the extent of a special journey of investigation through the important rubber sections of the world by Assistant Secretary Huston.

Trade promotion with South American states well warrants increased expenditure by our Government for many reasons; as a field of direct supplement to use of commodities we do not produce, as a field for exports and as a field for investment of our surplus capital, it is of the first importance.

The rubber question is a good case in point. We consume about 75 per cent of the rubber of the world and we cannot produce it in continental United States. We are dependent upon a comparatively few countries for its production—mostly in the Far East. We now witness a combination of dominant producing

*(Continued on Page 334)*

## KELLY RAISES PRICE TO AUTO MAKERS

**New Policy Covers Sales of All Sizes Pneumatic Tires Used on Passenger Cars. Purpose is to Offset Wide Differential Between Dealers' and Manufacturers' Cost.**

In an effort to bring about a condition of stability in the tire industry, such, for instance, as exists in the older lines of trade, the Kelly Springfield Tire Co. announces its intention to take a somewhat radical step in its dealings with car manufacturers. This is in line with earlier efforts of the company in taking independent leads which other manufacturers have been quick to follow.

Because the industry is still in a somewhat embryonic state there are yet a number of evils to be corrected, but the Kelly Company feels that immediate action is necessary in the matter of protecting the tire dealer against a condition which worked to his detriment not very long ago.

It has been the custom to sell tires to car manufacturers at a price far below that paid by the dealer in tires, or the car agent who dealt in them. Competition, however, grew so keen among tire manufacturers, that original equipment orders were often taken at prices which not only yielded no profit, but sales were sometimes made at a loss.

*Dealer Prices Will Prevail*

The Kelly Springfield Tire Co. now announces that during 1923 it will accept no orders for original equipment from passenger car manufacturers except at prices that closely approximate those paid by the tire dealer, who, they feel should be protected against a recurrence of a recent condition when certain car manufacturers finding themselves overstocked with tires, unloaded their surplus on the market at only a slight advance of the low price they paid, and for a long period made it impossible for a tire dealer to compete with such offerings.

In the early days of the industry when there were comparatively few automobiles in the country, passenger cars which came into a dealer's territory equipped with the tires he sold, provided not only a renewal business for him, but in most cases it resulted in the sale of one or two spares. In such circumstances it was considered good business for the tire manufacturer to seek original equipment on passenger cars, even if such business had to be taken at cost, and this opinion was shared by the tire dealer.

*(Continued on Page 336)*

## MASON'S EXPORT BUSINESS SHOWS LARGE INCREASE

The annual statement submitted by J. V. Aguirre, Export Manager of the Mason Tire & Rubber Company, to the management, reveals the rapid recovery in the company's foreign business.

In dollars and cents the increase during 1922 over 1921's business, was 120%. In tire units, the increase during the same period was 213%, in tubes 432% and in solid tires 264%. Forty-seven new direct accounts were opened during 1922, which added to the list of Mason dealers established during the past four years, gives the products of the company representation in practically every country in the world, including Iceland, Tahiti, Mauritius, French Senegal, Portuguese Guinea, Syria, Arabia, Ceylon, Nigeria, Kenya Colony, Gold Coast Colony and Manchuria.

1923 should prove just as satisfactory. During January two carloads of tires and tubes have been shipped to South Africa and a similar quantity to the Mexican distributor.

## Ott Rubber Co. Formed

Articles of incorporation have been filed for the Ott Rubber Co., Dubuque, Iowa to manufacture inner tubes and mechanical rubber goods. At a meeting of stockholders in January Joseph J. Ott was elected President and General Manager, A. F. Heeb, Vice-President and F. E. Ott, Secretary and Treasurer. The Board of Directors includes the officers and W. H. Klauer and G. W. Myers.

Offices will be opened in the Bank and Insurance Building in Dubuque.

## Rubber Imports Fourth in Value

Recent figures on United States imports for the period January-September 1922 showed that crude rubber was fourth on the list with a total value of $22,405,000, which was 33% of the total for that period. Raw silk (10.9%), cane sugar (9.5%) and coffee 5% are the three articles which show import values in excess of rubber.

## Converse Lease Boston Building

A Boston report states that the Converse Rubber Shoe Company has leased the four-story and basement building at 169-177 Purchase St., Boston, to be occupied as a warehouse and salesroom after extensive improvements.

## RUBBER COMMITTEES CONFER WITH HOOVER

*(Continued from previous page)*

areas to restrict production and to fix prices, wheras our consumers are not permitted under the Restraint of Trade laws to take any such action in their own protection. Taking it broadly, the progressive increase during the last ten years in the consumption of rubber has been such that if we can contemplate even one half this rate of increase during the next ten years the world will be short of rubber supplies unless more countries enter upon rubber production, even though restrictive policies were abandoned in the Far East.

Therefore, entirely aside from these restrictive policies it would appear that other rubber producing areas must be opened up if we are to have a national supply. It is desirable that this increase in production shall be stimulated in many different countries in order to maintain normal competitive relations.

During the temporary slump of a year ago, the price of rubber fell to a level which was undoubtedly unprofitable to the producers, and in consequence there was a certain amount of discouragment and slackening of plantation expansion which also gave impulse to the restrictive policies above referred to. So far as these policies are concerned it would appear that the recovery of the business world has already indicated that present supplies of rubber are no more than sufficient for our immediate needs and I have no doubt that the restrictive measures taken by these producers were without appreciation of the certainty of increasing demands within the United States.

Entirely aside from this, however, is the large question of the supply that will be required for the future, none of which can be produced within the borders of continental United States, and it is highly desirable that this Department should be placed in position where we can make an exhaustive investigation covering a wide variety of subjects such as areas of possible production, land and labor laws, labor supply, transportation, taxation, production costs, profits, security of investment, etc.

A special appropriation would be desirable, ample to provide for expansion of our trade promotion and investigation along these lines, assuming that the Department will secure the collaborating of other Government agencies. The proposed investigation on rubber would presumably also cover the Philippines as well as other suitable tropical areas.

Yours faithfully,

HERBERT HOOVER

## 1922 AUTOMOBILE OUTPUT SHOWS BIG INCREASE

Production of automobile and trucks in the year 1922 nearly doubled when compared with the previous year, the Department of Commerce announced recently.

The total output for the past year, subject to slight revisions on final reports, amounted to 2,334,171 passenger cars and 243,049 trucks. The census of manufacturers for 1921 gives a production of 1,435,161 passenger vehicles and 147,009 business vehicles.

The reports show that in December the output of automobiles amounted to 206,418 passenger cars and 20,138 trucks, almost three times as great as the December 1921 production. However, the December output was slightly less than that of November, in which month 214,632 passenger cars and 21,627 trucks were turned out.

The comparative figures are based on reports each month from identical firms, including ninety passenger car and eighty truck manufacturers.

## Raincoat Manufacturer to Move

It is reported that the New London Mfg. Co., of New London, Ohio will soon move to Sandusky, Ohio where it will employ about 50 men. R. R. Samford, president of this concern, was formerly employed by Goodrich it is stated.

## Fisk Company Earns $1,630,000

The preliminary report of the Fisk Rubber Company for 1922 will show net earnings of approximately $1,630,000, after interest and depreciation charges. Net sales were approximately $45,400,000, a gain of about 16 per cent. Unit sales increased about 62 per cent.

## Kleinert Moves Offices

The I. B. Kleinert Rubber Company, located for the past twenty-seven years at 725 Broadway, New York City, has arranged to move to the Rogers Peet Building, at 485 Fifth avenue, northeast corner of 41st street, where they have leased an entire floor.

# Summary of Rubber Exports for 1922

**Compiled by the Department of Commerce for Year 1922.**

RUBBER BELTING, HOSE, PACKING, AND THREAD.

| | Rubber Belting | | Rubber Hose | | Rubber Packing | | Rubber Thread | |
|---|---|---|---|---|---|---|---|---|
| | Pounds | Dollars | Pounds | Dollars | Pounds | Dollars | Pounds | Dollars |
| Total | 2,585,334 | 1,268,235 | 3,381,210 | 1,340,244 | 1,149,446 | 546,115 | 1,062,567 | 1,193,301 |

PNEUMATIC CASINGS AND SOLID TIRES.

| | Pneumatic Casings | | | | Solid tires | | | |
|---|---|---|---|---|---|---|---|---|
| | For automobiles | | Other | | Automobiles | | Other | |
| | Number | Dollars | Number | Dollars | Number | Dollars | Pounds | Dollars |
| Total | 1,326,220 | 16,604,459 | 54,931 | 234,718 | 55,665 | 1,518,932 | 769,857 | 210,050 |

RUBBER FOOTWEAR AND SOLES AND HEELS.

| | Boots | | Shoes | | Canvas shoes with rubber soles | | Rubber soles and heels | |
|---|---|---|---|---|---|---|---|---|
| | Pairs | Dollars | Pairs | Dollars | Pairs | Dollars | Pounds | Dollars |
| Total | 241,919 | 630,540 | 863,559 | 751,486 | 2,977,627 | 2,358,463 | 1,734,396 | 699,135 |

HARD RUBBER GOODS AND DRUGGISTS' RUBBER SUNDRIES.

| | Druggists' Rubber Sundries | | Battery jars and Accessories | | Other Electrical Supplies | | Other hard rubber goods | |
|---|---|---|---|---|---|---|---|---|
| | Pounds | Dollars | Pounds | Dollars | Pounds | Dollars | Pounds | Dollars |
| Total | 795,793 | 871,465 | 425,849 | 133,796 | 193,734 | 87,432 | 424,799 | 386,993 |

## U. S. MAKES WAGE INCREASE IN FOOTWEAR FACTORIES

WOONSOCKET, R. I., Jan. 22—The Woonsocket Rubber Company, footwear division, of the United States Rubber Company, to-day announced increased wages for employes in its local mill and that at Millville, Mass., effective February 1.

The amount of the increase was not announced, but it was understood it would equal the cut made in June, 1921. The number of employes affected totals 1,990. The company announced a full time schedule with the probability of its being continued throughout the year.

MALDEN, Mass., Jan. 23.—An upward revision of wages for workers in its factories here was announced today by the Boston Rubber Shoe Company, a branch of the United States Rubber Company. The amount of the increase was not made public. About 2,000 operatives are employed here. This action comes after announcement of an increase to the workers of the footwear branch of the United States Rubber Company at Millville and Woonsocket, R. I., yesterday.

## M. T. A. Hears Tire Addresses

Speaking at a meeting of the Motor Truck Association of Philadelphia on January 26 a number of representatives of truck tire manufacturers called to the attention of the members the abuses trucks and truck tires are put to and pointed out the many known means of increasing their mileage.

Among the speakers were R. E. McConnell, Kelly-Springfield; E. R. Shumen, Goodrich; W. C. Sweitzer, Firestone; E. G. Schick, Goodyear and C. Washer of United States Tires.

## Michelin Hold Sales Meeting

A number of Michelin star salesmen, the Top Notchers Club, recently held their annual meeting at the Martinique Hotel in New York. A trip to Milltown was also arranged for the party. This is an annual affair at which appear only those salesmen whose sales ability have been proven by the volume of business turned in.

## NEW MARKINGS REQUIRED ON IMPORTS TO SPAIN

WASHINGTON, Jan. 30, 1923.—All invoices accompanying shipments of casings and inner tubes going into Spain will be required to specify the serial numbers of both the tires and the tubes in order to be admitted, according to a Royal Order published in Madrid on January 23 and cabled to the Department of Commerce by Commercial Attaché Chas. H. Cunningham.

A period of 45 days has been granted so that foreign exporters may accommodate their shipments to this order, but American shippers are urged to see to it, hereafter, that all tires and tubes intended for the Spanish market bear a serial number before shipped, as it is the intention of the Spanish Government to enforce this requirement strictly.

## Milwaukee Tire Dealers Elect Officers

Following are the new officers elected by the Milwaukee Tire Dealers' Association on January 9: President, M. L. O'Brien; Vice Presidents, G. Kellner and E. Netz; Directors, H. O. Stenzel, G. Burmeister, Herbert Ruhnke and H. C. Graham. Membership dues were increased from $25 to $60 so as to allow for an increase in the association activities.

## BOSTON WOVEN HOSE ISSUES ANNUAL FIGURES

According to a recent statement the Boston Woven Hose and Rubber Co., Boston, Mass., reports a surplus of $1,059,417 for the fiscal year ended Aug. 31, 1922. Current assets of approximately $3,477,000 compare with current liabilities of only $426,000, leaving a surplus of quick assets over liabilities of more than $3,000,000. The company's fixed assets are more than $3,000,000 and capital stock amounts to $5,050,000.

The company's balance sheet is as follows: *Assets* — Real estate, $1,730,658; machinery, $1,346,565; furniture, fixtures and tools, $28,216; merchandise, $1,588,784; notes, $304,720; accounts receivable, $1,036,167; cash, $548,080; patent rights, $1; total $6,583,191. *Liabilities*—Capital stock, $5,050,000; accounts payable, $206,274; notes papable, $222,500; surplus, $1,059,417; reserve for adjustment Federal taxes, $30,000; reserve for bad debts, $15,000; total $6,583,191.

## Servus Rubber To Open Soon

Machinery, crude rubber and fabric has been purchased for the Servus Rubber Co., at Rock Island, Ill. It is planned to begin the manufacture of rubber footwear early in March.

## Receiver Appointed For Midland

E. A. Crawford and the Commercial National Bank were recently named as receivers for the Midland Tire and Rubber Co., Coshocton, Ohio. It is reported that the indebtedness is $170,000 and that the factory, equipment and stock on hand are valued at $80,000. The company is capitalized at $275,000 of which $165,000 worth of stock is outstanding.

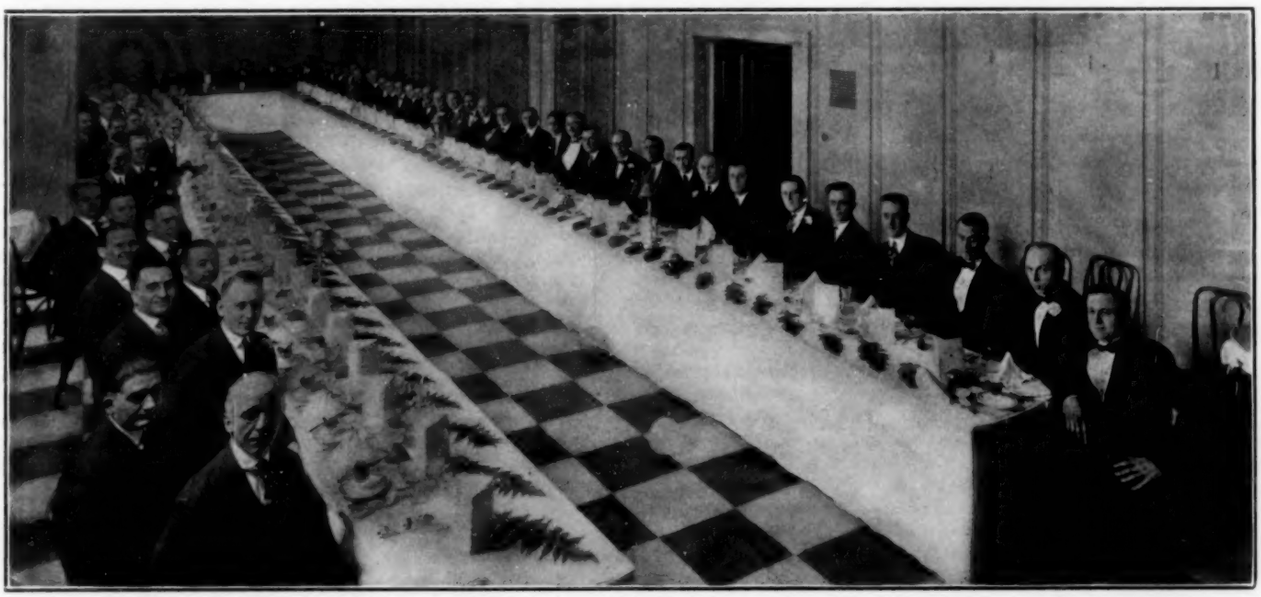

*Photo Kaufmann & Fabry Co.*

***Cut showing those in attendance at the Fourth Annual Dinner of the Mid-West Rubber Manufacturers' Association held at Hotel Morrison, Chicago, Tuesday, January 30, 1923. Complete report will appear in our next issue.***

## 40,000,000 TIRES WILL BE NEEDED IN 1923

An executive of a large rubber company estimates that about 40,000,000 tires will be needed in 1923 to keep America's host of motor cars properly "shod". Estimates of tire consumption in 1922 of 36,000,000 casings tally closely with figures gathered by the Rubber Association of America. Estimate of consumption in 1923 depends, to a considerable extent, on production of new cars. If the goal of 3,000,000 new cars is reached, obviously at least 12,000,000 new tires will be needed to equip them. Assuming two-thirds of new cars are immediately equipped with spares, would mean adding 2,000,000 more tires to our estimate, bringing it up to 14,000,000. Drop in motor car production from this estimate to 2,750,000 cars would cut tire consumption upwards of 1,000,000 casings.

Demand for tires to equip the cars now in use is estimated by this rubber man at 28,000,000 casings. Consumption from this source, which provides the real profits for tire manufacturers, is estimated in an interesting fashion. Accurate figures of gasoline consumption are available and it is found that the rate of increase has been remarkably uniform for the past several years. Of the gasoline used in the United States it is estimated that 60% is devoted to the propulsion of motor cars. Average mileage is figured at 12 miles to the gallon of gasoline and 6000 miles to the set of tires. Applying these figures to the estimated gasoline consumption for 1923 we get the estimate of 28,000,000 tires to be consumed by cars now in use.

Roundabout as this method may seem, estimates made in this way in the past have tallied very accurately with actual consumption figures as found by the Rubber Association of America. Accordingly the estimate of 42,000,000 tires to be consumed in 1923 is regarded by a practical tire man as an outside figure.—*Barrons.*

## Rubber Institute Membership List

The Institute of Rubber Industry, London, has recently issued a list of members as of November 1922. This organization founder "to promote a better understanding and a closer relationship between all sides of the Rubber Industry" is also known as The Rubber Club of Great Britain Ltd. by Guarantee.

Although but in its second year of existance, the Institute already has a membership of 377 divided into the following classes: Honorary, 2; Full, 93; Merchant, 40; Associate, 181; and Graduate, 61.

J. P. Alexander Johnston, Managing Director of the North British Rubber Co., Ltd., is President of the Institute. Among the ten Vice-presidents are included the following well-known rubber men: Sir F. Swettenham, G.C.M.G.; Howard Figgis; H. G. Montgomery and D. F. L. Zorn.

Offices are maintained at Faraday House, 10 Charing Cross Road, London, W.C.2.

# PERSONALS

### Terhune Now in Sales Department

Royal E. Terhune has been placed in charge of the Northern New Jersey sales territory of the Uehling Instrument Company, Paterson, N. J. manufacturers of $CO_2$ recorders and other power plant equipment. Mr. Terhune was formerly associated with the Uehling laboratories and is therefore well qualified to co-operate with power plant operators on the important subject of power plant economy.

### Oldfield Retires as President

It is reported that Barney Oldfield has retired as president of the Oldfield Tire Co., Akron, Ohio and that he will devote his time in the future to his new concern, the Barney Oldfield Manufacturing Co., of Los Angeles, manufacturers of die cutters.

Theodore E. Smith, Jr. was recently appointed as Goodrich Branch Manager at Buffalo to succeed R. W. Brouse, now located in Cleveland. Mr. Smith was formerly located at the home office in Akron.

• • •

H. Tyler Kay, recently with The Erie Tire and Rubber Company has returned to The Madison Tire and Rubber Co., in Buffalo as Assistant Sales Manager in charge of advertising and Sales Promotion.

• • •

Announcement has been made of the transfer of Frank Zech from the New York office to the Akron office of Fred Stern and Co., crude rubber importers.

• • •

E. L. Bullock, formerly of Katzenbach and Bullock and later The Tidewater Chemical Co., has now formed his own company to deal in chemicals at 99 John St., New York City.

# KELLY INCREASES PRICE TO CAR MANUFACTURERS

*(Continued from Page 333)*

In view of present conditions, however, there seems to be no reason for a continuance of this obsolete practice, so far, at least, as it relates to passenger cars. On large pneumatics, cushions and solid tires for trucks, the Kelly Co. feels that there is still justification for taking business from truck manufacturers for original equipment at prices below that obtained from the dealer, because the truck field is still comparatively undeveloped; there is no spare business to be obtained—except in the large pneumatic equipment and this is not a general rule—so renewal and service are still important considerations for the dealer.

One of the evils growing out of this competition for manufacturers' business was the sale of tires to car builders at so low a price that it enabled some of them to include as many as two spares with each new car, thus automatically shutting out the dealer in tires from a market that should have been legitimately his.

Because of these conditions the Kelly Company has decided to practically confine its efforts in the sale of pneumatic passenger car tires to dealers.

That is, while it will not, of course, decline original equipment business from the manufacturer of passenger cars, it will not accept such orders at prices that differ materially from that paid by the dealer in tires, and then with the distinct understanding that only four tires shall constitute original equipment.

The Kelly Company feels that its product is widely and favorably known, and that because of its reputation it need not seek original equipment orders at prices so far below that paid by its dealers that such business, instead of becoming an advantage, works to the direct detriment of the latter.

A certain amount of business may safely be taken at cost, but when the bulk of operations are made not only at cost but at a loss, as has been the case in some instances, then profits must come from somewhere and the only available source would be the balance of trade—which means that the dealers would have to be charged all the traffic would bear. Obviously, if no loss were sustained, the price to the dealer could and would be lowered. In the end, of course, the charge is always passed on to the consumer, so the public pays.

Some of the reasons attributed by the Kelly Company for its ability to bring down its prices in spite of the high quality of its product, has been its determination to take no business at a loss, the focusing of its attention on the dealer, and according him all possible protection. The result has been the doubling of its business in 1922 over that of 1921 and the ending of the year with a highly satisfactory margin of profit. Hence the determination to hereafter treat the manufacturer with all the justice that his importance deserves, but not beyond that at the expense of the dealer, who, after all, is the backbone of the business.

A news-report from Akron, dated January 23 in the *New York Tribune* states that, "signs of a revolution against the automobile industry are seen in the Ohio rubber industry. It is reliably reported that a movement is on foot among tire manufacturers to exact better than cost prices for their product from the automobile manufacturers. For many years the tire industry has derived its profits from the replacement business, the automobile manufacturer having obtained the original tires at very nearly cost."

## GOODRICH 1922 SALES REACH OVER $93,000,000

New York, Jan. 24, 1923.—Directors of the B. F. Goodrich Company to-day declared the quarterly dividend of $1.75 a share on the preferred stock, payable April 2 to stockholders of record March 22. Preliminary figures for the year 1922 show gross sales of approximately $93,000,000. Net earnings are shown as $3,000,000, which, after preferred dividends, was equivalent to 65 cents a share earned on the 601,400 shares of common stock outstanding.

The company in 1922 liquidated its short indebtedness of $30,000,000 seven per cent convertible gold notes from proceeds of an issue of $25,000,000 6½ per cent first mortgage bonds with balance in cash, the directors reported.

There is a net working capital of more than $35,000,000 it was stated. Current assets of Dec. 31 were about $51,700,000 and current liabilities, $16,400,000.

## World Car Registration for 1922

Figures just issued by the Department of Commerce show a gain of 2,034,717 in 1922 over the 1921 figures for world registration of motor cars and motorcycles. Of this number 1,851,716 was the gain for the United States with the balance 183,001 distributed over all other countries.

The United States registrations for 1922 show a total of 12,357,376 for passenger cars and trucks divided into 11,025,377 for the former and 1,331,999 for trucks. In addition there were 210,000 motorcycles registered.

The world registration was 14,622,161 of which 12,858,783 were passenger cars and 1,763,378 were trucks. The world total of motorcycles was 893,365.

## Denman-Myers Hold Annual Meeting

The annual stock-holders meeting of Denman-Myers Cord Tire Co., was held on January 22nd at the company's general office at Warren, Ohio.

The treasurer's report, read by H. W. Leffingwell, Auditor, showed a marked increase in business over 1921. It was stated that the company was in an excellent position for making 1923 a banner year.

Talks were given by W. E. Myers, President; F. F. Dugan, Director of Sales; Stockholder W. W. Davies and a dealer, T. J. Rees.

The present Board of Directors was unanimously re-elected. The Board consists of: Walter E. Myers, Chairman, W. R. Denman, F. F. Dugan, L. M. Harper, P. A. McCaskey, J. E. Morris, E. H. Peck, W. B. Prenter, F. C. Raymond, F. W. Stillwagon and H. F. Webster.

## India Declares Stock Dividend

The India Tire and Rubber Co., of Mogadore, Ohio has declared a quarterly dividend of $1.75 per share on preferred stock and $1 a share on common stock.

## Fire at Victor Rubber

The dryer building of the Victor Rubber Co., at Springfield, Ohio was destroyed by a fire of unknown origin on January 10. Factory operation, it was stated, would not be hampered as a result of the fire.

# UNITED AND GLOBE COMPANY ABSORBED

**Rigaudiere Is Elected President—Broughton Is Chairman of Board—No Changes Are Planned in Globe Branches.**

The United & Globe Rubber Company, Trenton, N. J., has been absorbed by the United & Globe Rubber Corporation, recently incorporated in Delaware.

The new company has acquired all of the assets, patent rights, trade marks and

MR. GUY DE LA RIGAUDIERE

business of the old company, which passes out of existence. The operation is said to have been made necessary by an unprecedented demand for United & Globe products, making larger capital necessary to take care of the increased business.

John S. Broughton, president of the old company, has been made chairman of the board of the new concern, and Guy de la Rigaudiere, president of the Traveler Rubber Company of Bethlehem, Pa., has been elected president of the United & Globe Rubber Corporation. From the Traveler Company also come Victor Durand, Jr., and G. J. P. Raub, who are now respectively first and second vice presidents of both corporations.

No other changes are contemplated in the United & Globe personnel, nor in the branch offices which the concern maintains in New York, Philadelphia, Chicago, St. Louis, Denver, Duluth, Seattle, Pittsburgh, San Francisco, Los Angeles, Washington, D. C., Richmond, Va., Buffalo, N. Y., and Houston, Tex. V. von Schlegell and Franklin C. Edson are vice presidents in charge of the company's New York offices.

Four directors of the Traveler Rubber Company are now directors of the United & Globe Rubber Corporation.

## N.T.D.A. on Original Equipment

The Board of Directors of the National Tire Dealers' Association at its meeting in Chicago, on February 1st, discussed the question of the extra tire equipment on new cars. The National Association believes that this business rightfully belongs to tire dealers, and is taking away revenue that tire dealers should receive. The seriousness of this extra-tire-equipment situation, is indicated by the dealers who contend that extra equipment on two million cars this year will represent approximately six per cent of the year's business. A letter to the members of the National Tire Dealers' Association by its President, George J. Burger, declares that automobiles should be sold on their merits, and not because of the extra equipment furnished. "By continuing to give away these tires," he says, "the car manufacturers are taking away the business rightfully belonging to about one hundred thousand tire dealers in the United States. Sooner or later, if this practice continues, it will have a detrimental effect upon car manufacturers. We are determined to present a protest not only to the tire manufacturers, but also in an indirect way, to those car factories that insist on this abuse of the extra-tire-equipment practice."

## France Claims Inferiority of Cord Tire

Publicity in the form of mimeographed sheets entitled "As Concerns the Cord Tire" is being circulated in the Lille district by certain automobile accessory dealers, Consul Paul C. Squire, Lille, reports to the Department of Commerce, with the purpose if discrediting the cord type of pneumatic tire. The propaganda consists of testimonials by physicians in favor of the fabric tire as purported to have been published in the "Quinzaine Medicale" (Medical Bi-Monthly) No. 9 issue of November, 1922, and it is alleged that the cord tire is much more frequently punctured than the cheaper fabric tire. The leading French companies are no longer producing fabric tires, and now only cords are offered for sale.

## Dovan to Handle Own Sales

Announcement is made by The Dovan Chemical Corporation, 30 Church St., New York that effective January 2, 1923, it terminated its sales agreement with The States Metal Co., New York, its former sales agents and that hereafter it will handle its own sales of diphenylguanidine and "XLO" accelerators. The sales agents will be J. A. Kendall, Akron; J. E. Odell, Boston; H. T. Kraft, New York; Martin, Hoyt and Milne, California and T. E. O'Reilly, Ltd., Toronto.

These products are sold under U. S. Patent 1,411,231 and Grasselli Patent 1,149,580. The Perth Amboy Chemical Works are the only other authorized source of supply for these materials which are sold by Roessler & Hasslacher Co., New York.

## INTERESTING TALKS AT MEETING OF PHILADELPHIA A.A.B.A.

Instructive addresses on merchandising and profit and the benefits through membership in an active, state-wide organization, with the showing of an educational motion picture film set, were the outstanding features of the January meeting of the Automobile Accessories Business Association at the headquarters of the Philadelphia Automobile Trade Association, Broad and Callowhill streets, Philadelphia, on the evening of January 19.

The session was a rousing one, notwithstanding the counter-attraction of the Automobile Show and was well attended by members and guests, marking an auspicious start for the year under Guy S. Lane, the new president and his associate officers. Following the dinner, a self-explanatory series of reels was thrown upon the screen. It is planned to have educational films shown at as many monthly meetings as possible.

In a "Chalk Talk on Merchandising," S. P. McMinn, editor of Automotive Merchandising, New York, entertained by illustrating cleverly on the blackboard the main points in his explanation of the meaning of merchandising and profit in terms of storekeeping.

George C. McFarland, Harrisburg, president of the Pennsylvania Automotive Association, and L. H. Hagerling, Erie, secretary-manager of that organization, told what their association is doing to help the automotive industry generally, including the accessory trade, and made strong pleas for the members of the Automobile Accessories Business Association to join the state organization.

## Golfer's New Waterproof Garment

*Photo International*

**An ingenious waterproof garment has been devised for golfers. It consists of a cape and sleeveless jacket, with slip-on leggins. By pulling a string, the wearer slides the cape out of the way behind him, and by securing it with a belt has both arms quite free for play. Manufactured by John A. Gavin, 386 Broadway, N. Y. City.**

## Receiver for Tuscora

For the second time within a year a receiver has been apointed for the Tuscora Rubber Co., New Philadelphia, Ohio, upon petition of The Johns-Manville Co.

## Developments in Goodyear Suit

On January 27, there were filed three amended petitions by Laura L. T. Weiss in her suit against the Goodyear Tire and Rubber Company and the Leonard Kennedy Co. The new petitions ask:

That the Kennedy company be enjoined from payment of 5 per cent commission on Goodyear net profits in excess of $10,000,000 per year for the six months following May 12, 1922;

That the twenty-year first mortgage 8 per cent sinking fund gold bonds be declared invalid because the method of their retirement (by drawing lots) is in violation of the Ohio laws prohibiting lotteries or games of chance;

That Dillon, Read & Company, holders of 275,000 shares of no-par common stock issued for use as bonus to bond purchasers, be required to transfer their option to the Goodyear company in the event that the prayer for cancellation of the stock is denied.

## Looking Back in Tire History

In an interesting article in January *Motor*, Dr. W. C. Geer of Goodrich relates for the benefit of the motorist the history of the tire in an article which took the reader back a number of years from the time when the wear, service and application of tires were "bugaboos" up to the present time of the cord tire.

The differences between cord and fabric tires were explained as well as the various manufacturing operations as vulcanization, compounding, etc. The development of highways and universal use of automobiles for transportation were mentioned as well as the source of crude rubber supplies.

## STATISTICS COMPILED FROM SPECIAL QUESTIONNAIRE IN CONNECTION WITH RESTRICTION OF CRUDE RUBBER PRODUCTION

In the following there is presented the totals compiled from the responses to the Special Questionnaire distributed by the Rubber Association on December 1st to secure information needed to study the effect of the restriction of crude rubber production.

357 manufacturers actually supplied information in response to the questionnaire. It is believed that all of the substantial consumers in the industry are included and that the data represents 95% of the whole.

The association, through its special committee on the restriction of crude rubber production, will use this information in conference with the representatives of the Rubber Growers Association of London.

### Consumption of Crude and Reclaimed Rubber

| | 1919 (Long Tons) | | 1920 (Long Tons) | | 1921 (Long Tons) | | 1922* (Long Tons) | |
|---|---|---|---|---|---|---|---|---|
| Total Quantity of Crude Rubber Consumed for all Purposes: | Plantation | All Other | Plantation | All Other | Plantation | All Other | Plantation | All Other |
| American Manufacturers (341) | 176,512 | 18,708 | 169,797 | 18,548 | 152,213 | 12,122 | 259,705 | 15,580 |
| Canadian Manufacturers (16) | 6,295 | 788 | 6,862 | 1,063 | 4,335 | 638 | 7,605 | 381 |
| Total | 182,807 | 19,496 | 176,659 | 19,611 | 156,548 | 12,760 | 267,310 | 15,961 |
| Total Quantity of Reclaimed Rubber Consumed for All Purposes: | | | | | | | | |
| American Manufacturers (341) | | 69,784 | | 70,813 | | 39,973 | | 52,851 |
| Canadian Manufacturers (16) | | 3,751 | | 4,484 | | 1,378 | | 1,607 |
| Total | | 73,535 | | 75,297 | | 41,351 | | 54,458 |

* Includes estimated consumption for unexpired period in 1922.

### Inventory of Crude Rubber in the United States and Afloat for U. S. Ports on October 31, 1922.

| | ON HAND (Long Tons) | | AFLOAT (Long Tons) | |
|---|---|---|---|---|
| | Plantation | All Other | Plantation | All Other |
| American Manufacturers (341) | 54,574 | 5,383 | 12,881 | 335 |
| Canadian Manufacturers (16) | 2,282 | 179 | 152 | 36 |
| American Importers and Dealers (38) | 21,341 | 1,223 | 29,375 | 735 |
| Total | 78,197 | 6,785 | 42,408 | 1,106 |

Figures compiled by the Rubber Association of America, Inc.

# MARKETS

## Cottons and Fabrics

NEW YORK, FEBRUARY 3, 1923

THE big demand from trade interests both here and abroad and the growing strength of its statistical position brought cotton on January 22 close to 29 cents a pound. This new high-record price since 1920, made when May cotton sold within 1/8 cent of 29 cents a pound, was an advance of 80 per cent from the low of January 1922. And there are some optimists who are even inclined to believe that it will reach 30 cents before this year's crop begins to move.

The upward movement followed the publication of the last ginning report prior to the final one to be issued March 20 officially determining the size of last year's crop. The report showed that 9,652,601 bales of the 1922 crop had been ginned prior to January 16. The Department of Agriculture's final estimate of the crop made in December was 9,964,000 bales of 500 pounds gross weight. Of the cotton ginned prior to January 16 there were included 30,967 bales of American-Egyptian and 5,065 bales of Sea Island.

The new cotton crop is exciting attention here and abroad as so much depends on its size. It now looks as though the supply with which to meet domestic mill purchases and exports for the next seven months will be 3,000,000 bales less than a year ago at this time. As to the new crop the Government's crop notes state that the South is planning a larger acreage this year and there is an interesting story from Illinois that the farmers in the southern section of the state are going to try cotton growing and it is figured that with the absence of the boll weevil in that section a profitable crop can be raised. It may be taken as certain that planters here and abroad will put every possible acre under cotton.

Cotton prices on the New York Cotton Exchange on January 22 when the high record for the staple was made are here given:

| | Open. | High. | Low. | Close. | Previous Day. |
|---|---|---|---|---|---|
| Jan. | 28.05 | 28.50 | 28.00 | 28.45@28.50 | 27.87 |
| March | 28.25 | 28.65 | 28.24 | 28.62@28.63 | 28.02 |
| May | 28.45 | 28.88 | 28.40 | 28.78@28.82 | 28.24 |
| July | 28.23 | 28.59 | 28.18 | 28.52@28.55 | 27.98 |
| Oct. | 26.34 | 26.72 | 26.34 | 26.61@26.64 | 26.16 |
| Dec. | 26.02 | 26.36 | 26.02 | 26.29 | 25.90 |

### *EXTRA STAPLE COTTON*

Buying of extra staple cotton was in considerable volume during the two weeks under review and was general throughout the New England market. Prices of all grades were effected by the wide spread interest and the demand extended to all varieties, Egyptians, Peruvians and Domestics; even Sea Island was active. Strict low middling and straight middling were especially in demand.

Egyptians were in good favor and medium uppers and Saks are quoted considerably higher than two weeks ago. Medium grade uppers brought 34 to 35 cents and medium Saks 36 to 37 3/8. There were some sales of medium uppers reported as low as 32 cents on spot for a limited quantity.

Pimas were again active and some large sales were made. Number ones and twos were in demand, the former bringing from 37 1/2 to 38 cents according to length of staple specified. Threes range from 35 1/2 to 36 cents and twos are quoted as low as 36 1/2 cents.

Peruvian Mitafiffi of medium grade is quoted at 33 1/2 to 34 1/2 cents with Tangris strict middling, ranging from 34 to 35 cents. An inquiry for choice Sea Island brought out a quotation of 37 cents.

Prices generally on extra staple cotton, strict middling in grade and color and of a very high standard of stapling, f. o. b., New Bedford, follow:

1 1/8 inch, 32 1/2 to 33 cents.
1 3/16 inch, 34 to 35 cents.
1 1/4 inch, 35 1/2 to 36 1/2 cents.
1 5/16 inch, 38 cents upward

### *Smith's Cotton Investigation*

The resolution of Senator Smith of South Carolina, directing the Federal Trade Commission to make a sweeping investigation of the cotton industry, was reported favorably by the Senate Agricultural Committee and the resolution will be pressed for action in the Senate. The investigation would cover domestic and foreign production; consumption; cotton exchanges; mill operations and every feature in the growing and marketing of cotton.

### *TIRE FABRICS*

The tire fabric mills were busy the past two weeks and some mills are in a sold up condition for many months ahead. Those mills that have cost plus arrangements are being called upon to deliver the regular quota. The level of prices is probably higher than it was some weeks ago but it still seems to be the rule to negotiate on inquiry rather than to quote hard and fast prices.

Carded peeler has the preference over all other fabrics and is held at 63 to 68 cents. That there will be a shortage of tire fabric, is the opinion expressed by President Mason of the Mason Tire & Rubber Co., which company operates several tire fabric mills as well as manufacturing tires. In a report to his stockholders he predicts that before the middle of the year "consumers will be scrambling for the output of the mills". He further states that the price of fabric will advance on account of the shortage which, he says, will be a genuine shortage and not an artificial shortage such as he believes is being created in crude rubber by the Stephenson plan.

#### CORD FABRICS

| | | | |
|---|---|---|---|
| Combed Sakellarides | | .80 @ | .85 |
| Combed Peeler | lb. | .75 @ | .80 |
| Carded Peeler | lb. | .63 @ | .68 |
| Combed Egyptian uppers | lb. | .74 @ | .77 |
| Carded Egyptian uppers | lb. | .70 @ | .72 1/2 |

#### SQUARE WOVEN

| | | | |
|---|---|---|---|
| 17 1/4-ounce Egyptian uppers, combed | lb. | .71 @ | .74 |
| 17 1/4-ounce Egyptian uppers, carded | lb. | .67 @ | .69 |
| 17 1/4-ounce Sakellarides, combed | lb. | .77 @ | .82 |
| 17 1/4-ounce Peeler, combed | lb. | .73 @ | .78 |
| 17 1/4-ounce Peeler, carded | lb. | .60 @ | .65 |

SHEETINGS—Business in sheetings has been active and prices on some constructions showed material advances. The 40 inch, 2.85 yard went to 17 1/2 cents net for near by. 40 inch, 3.60 yard brought 14 1/4 cents net and 40 inch, 2.50 yard sold at 20 net on contracts.

DUCKS—Hose duck was advanced in some quarters but was generally quoted at 46 to 48 cents. Shoe ducks range from 55 to 60 cents. Good business was done in single filling at 23 to 24 1/2 cents price varying according to grade. Double filling came at 24 1/2 to 26 1/2 cents card basis. During the past week there has been a slowing up in buying interest.

BURLAPS—The local market continues weak with buyers difficult to interest and sellers plentiful. Reserves of burlaps in Calcutta are reported to have fallen from 100,000,000 yards to about 40,000,000 yards; exports evidently being on a heavier scale than manufacturers.

#### SHEETINGS

| | | | |
|---|---|---|---|
| 40-inch 2.50-yard | yd. | .20 @ | .20 1/4 |
| 40-inch 2.85-yard | yd. | .16 3/4 @ | .17 1/4 |
| 40-inch 3.15-yard | yd. | .16 1/2 @ | — |
| 40-inch 3.60-yard | yd. | .14 1/4 @ | — |
| 40-inch 3.75-yard | yd. | .13 1/2 @ | .14 |
| 40-inch 4.25-yard | yd. | .11 3/4 @ | .12 |

#### DUCKS

| | | | |
|---|---|---|---|
| Belting | lb. | .46 @ | .48 |
| Hose | lb. | .46 @ | .48 |
| Enameling | lb. | .50 @ | .55 |
| Shoe Ducks | lb. | .55 @ | .60 |
| Single filling | lb. | .23 @ | .24 1/2 |
| Double filling | lb. | .24 1/2 @ | .26 1/2 |

#### BURLAPS
(Carload Lots)

| | | | |
|---|---|---|---|
| 8 -ounce 40-inch | | 7.25 @ | 7.30 |
| 7 1/2-ounce 40-inch | | 7.25 @ | 7.30 |
| 10 -ounce 40-inch | | 8.85 @ | 8.90 |
| 10 1/2-ounce 40-inch | | 8.90 @ | 8.95 |

#### DRILLS

| | | | |
|---|---|---|---|
| 37-inch 3.25-yard | yd. | .14 3/4 @ | — |
| 37-inch 2.75-yard | yd. | .16 3/4 @ | — |
| 37-inch 3.00-yard | yd. | .15 3/4 @ | — |
| 37-inch 3.50-yard | yd. | .14 1/4 @ | .14 1/2 |
| 37-inch 3.95-yard | yd. | .13 @ | — |

#### OSNABURGS

| | | | |
|---|---|---|---|
| 30-inch 7-ounce | | .18 3/4 @ | .19 |
| 40-inch 7-ounce | | .20 @ | — |

# Chemicals and Compounding Ingredients

THE INDUSTRIAL CHEMICAL MARKET—NEW YORK, February 3, 1923—The demand for industrial chemicals the past two weeks was fairly active and while there were no materially large operations reported the entire list showed a firmness of tone that was very satisfactory to producers and sellers. Buyers found little chance to shade prices of any of the important items and, generally, where price changes were recorded, advances were made. Contract business was very heavy which would indicate that consumption will continue good. The two weeks has been a period of distressing delays in shipments all over the east and the south due to the poor railroad service. A matter which is causing considerable speculation in the chemical markets is the effect the general disturbance in Europe will have on imported materials. Imported chemicals have been reaching toward higher levels and any curtailment of production, particularly of the low priced chemicals that come from Germany, will make it very difficult for importers to replace these stocks which have been selling very low compared with domestic products. Considering the market as a whole there is every reason to believe that prices will go higher.

## ACCELERATORS

### *Organic*

| | | | |
|---|---|---|---|
| **Aldehyde ammonia, crystals** | lb. | $ .93 | @ — |
| Aniline oil, bulk basis, | lb. | .16½ | @ .17 |
| Diphenylguanidine | lb. | 1.20 | @ 1.50 |
| Excellerex, | ton | 17.00 | @ — |
| Formaldehyde-Aniline | lb. | .51½ | @ — |
| **Hexamethylene-tetramine** | lb. | .95 | @ .97½ |
| **Paraphenylenediamine** | lb. | 1.50 | @ 1.55 |
| Thiocarbanilide, kegs | lb. | .28 | @ .40 |
| **Vulvocene** | lb. | .35 | @ — |

### *Inorganic*

| | | | |
|---|---|---|---|
| **Lead,** sublimed blue | lb. | .08½ | @ — |
| **Lead,** white | lb. | .08½ | @ — |
| **Litharge,** domestic | lb. | 10.65 | @11.54 |
| imported | lb. | — | @ — |
| **Lime, Superfine** | lb. | .02 | @ .02½ |
| **Magnesia, calcined,** light, | lb. | .20 | @ .24 |
| **extra light** | lb. | .45 | @ — |
| heavy | lb. | .04¾ | @ .05 |
| Orange Mineral | lb. | 14.15 | @15.25 |

## COLORS

### *Blacks*

| | | | |
|---|---|---|---|
| Carbon Black | lb. | .18 | @ .24 |
| **Micronex** | lb. | .17 | @ 24 |
| **Lamp Black** | lb. | .12 | @ .40 |
| **Bone "** | lb. | .05½ | @ .07½ |
| **Drop "** | lb. | .07½ | @ .16 |
| **Ivory "** | lb. | .15 | @ .45 |

### *Blues*

| | | | |
|---|---|---|---|
| **Prussian** | lb. | .55 | @ .60 |
| Ultramarine | lb. | .10 | @ .35 |
| **Cobalt** | lb. | .21 | @ .26 |

### *Browns*

| | | | |
|---|---|---|---|
| **Iron oxide** | lb. | .05 | @ .06 |
| Sienna, Italian, | lb. | .07 | @ .08¾ |
| Umber, Turkey, | lb. | .05 | @ .06 |
| Vandyke, domestic | lb. | .06 | @ .07 |

### *Greens*

| | | | |
|---|---|---|---|
| **Chrome, light** | lb. | .30 | @ .32 |
| **medium** | lb. | .35 | @ .36 |
| **dark** | lb. | .36 | @ .45 |
| **commercial** | lb. | .12 | @ — |

### *Reds*

| | | | |
|---|---|---|---|
| Antimony, crimson | lb. | .34 | @ .50 |
| golden | lb. | .18 | @ .35 |
| **red sulphuret** | lb. | .20 | @ .22 |
| Indian, English, | lb. | .12 | @ .15 |
| **Para toner** | cwt. | 1.00 | @ 1.10 |
| Toluidine toner | lb. | 2.10 | @ 2.25 |
| **Venetian red** | lb. | .03½ | @ .06 |
| **Vermillion, quicksilver,** English | lb. | 1.35 | @ 1.40 |
| **domestic** | lb. | .25 | @ .30 |

### *Whites*

| | | | |
|---|---|---|---|
| **Albalith** | lb. | .06½ | @ .07 |
| **Aluminum bronze** | lb. | .55 | @ .60 |
| Azolith | lb. | .06½ | @ .07 |
| **Lithopone, domestic** (factory) | lb. | .06½ | @ .07 |
| Zinc Oxide—American Process | | | |
| American Horse Head Special | lb. | .08 | @ .08½ |
| XX red | lb. | .07½ | @ .08 |
| American Azo: | | | |
| ZZZ (lead free) | lb. | .07½ | @ .08 |
| ZZ (under 5 per cent leaded) | lb. | .06¾ | @ .07¼ |
| Z (8-10 per cent leaded) | lb. | .06½ | @ .06¾ |
| Zinc Oxide—French Process | | | |
| White seal | lb. | .11½ | @ .11¾ |
| Green seal | lb. | .10¼ | @ .10¾ |
| Red seal | lb. | .09¼ | @ .09¾ |

### *Yellows*

| | | | |
|---|---|---|---|
| Chrome, light | lb. | .17 | @ .18 |
| dark and medium | lb. | .17 | @ .18 |
| **Cadmium Sulphide** | lb. | 1.50 | @ 1.75 |
| Ocher, French | lb. | .03 | @ .03¾ |
| domestic | lb. | .02 | @ .03½ |

## COMPOUNDING INGREDIENTS

| | | | |
|---|---|---|---|
| **Aluminum flake** | ton | 15.00 | @30.00 |
| **hydrate** | lb. | .18 | @ .20 |
| Ammonia carbonate, | lb. | .10½ | @ .11½ |
| Barium carbonate | ton | .75 | @ .80 |
| Barium Dust | lb. | .05 | @ — |
| Barytes, southern off-color, ton | | 15.00 | @20.00 |
| Western, prime white, ton | | 26.00 | @ — |
| Basofor | lb. | .04¾ | @ — |
| Blanc fixe, dry, f.o.b. works | lb. | .04¼ | @ .04½ |
| Carrara filler | lb. | .01½ | @ .02 |
| **Chalk,** precipitated, | | | |
| extra light | lb. | .03½ | @ .04½ |
| heavy | lb. | .02½ | @ .03¼ |
| Clay, China, domestic, | ton | 15.00 | @16.50 |
| imported | ton | 16.25 | @23.25 |
| Dixie | ton | 22.00 | @32.00 |
| Blue Ridge | ton | 20.00 | @30.00 |
| **Fossil flour** | ton | 60.00 | @ — |
| **Glues, extra white** | lb. | .30 | @ .40 |
| medium white | lb. | .20 | @ .26 |
| cabinet | lb. | .18 | @ .30 |
| cabinet low grade | lb. | .16 | @ .19 |
| common bone | lb. | .08½ | @ .14 |
| Graphite flake, bbls. | lb. | .05 | @ — |
| amorphous | lb. | .05 | @ — |
| Infusorial earth, powdered | ton | 65.00 | @ — |
| bolted | ton | 65.00 | @ — |
| Liquid latex | gal. | 1.30 | @ — |
| Mica, powdered | lb. | .15 | @ — |
| Rotton Stone (powdered) | lb. | .02½ | @ .04½ |
| Silica (gold bond) | ton | 31.00 | @ — |
| Soapstone, powdered | ton | 12.00 | @15.00 |
| Starch, powdered | cwt. | 2.80 | @ 2.90 |
| Talc, domestic | ton | 15.00 | @18.00 |
| French | ton | 25.00 | @32.50 |
| French, high grade | ton | 43.00 | @48.00 |
| Italian | ton | 47.00 | @58.00 |
| Terra Alba | cwt. | 1.85 | @ 2.00 |
| Tripoli, white | lb. | .02 | @ .02½ |
| Whiting, commercial | cwt. | 1.00 | @ 1.25 |
| **Quaker** | ton | 13.00 | @15.00 |
| English cliffstone | cwt. | 1.50 | @ 2.00 |
| gilder's bolted | cwt. | 1.10 | @ 1.25 |
| Paris whiteAmerican | cwt. | 1.25 | @ 1.50 |
| Wood pulp XXX | ton | 35.00 | @ — |
| " " X | ton | 25.00 | @ — |
| Zinc Oxide— | | | |
| 5 per cent leaded | | .06¾ | @ .07¼ |
| 10 per cent lead sulphate | lb. | .06½ | @ .07 |
| 20 per cent lead sulphate | lb. | .06½ | @ .07 |
| 35 per cent lead sulphate | lb. | .06½ | @ .07 |

*(Also see whites)*

## MINERAL RUBBER

| | | | |
|---|---|---|---|
| Gilsonite | ton | 65.00 | @ — |
| Genasco (factory) | ton | 60.00 | @ — |
| Hard hydrocarbon | ton | 33.00 | @42.00 |
| Soft hydrocarbon | ton | 32.50 | @38.00 |
| Pioneer M.R. | ton | 42.00 | @44.00 |
| 320/340 M. P. hydrocarbon (c. l. factory) | ton | 40.00 | @50.00 |
| 300/310 M. P. hydrocarbon (c. l. factory) | ton | 35.00 | @45.00 |
| Synpro, granulated, M. R. (factory) | ton | 55.00 | @75.00 |

## SOFTENERS

### *Acids*

| | | | |
|---|---|---|---|
| Acetic, 28 per cent | cwt. | 3.17 | @ 3.92 |
| Cresylic, 97 p. c. | gal. | .85 | @ .90 |
| 95 p. c. | lb. | .55 | @ .57 |
| Muriatic, 20 degrees | cwt. | 1.00 | @ 1.10 |
| Nitric, 36 degrees | cwt. | 4.50 | @ 5.00 |
| Sulphuric, 66 degrees | ton | 14.00 | @16.00 |
| 60 degrees | ton | 9.00 | @12.00 |
| Tartaric, crystals | lb. | .32 | @ — |

### *Alkalies*

| | | | |
|---|---|---|---|
| **Caustic soda, 76 p.c.** | cwt. | 3.45 | @ 3.75 |
| **Soda ash, 58 p.c.** | cwt. | 1.95 | @ 2.30 |

### *Oils*

| | | | |
|---|---|---|---|
| **Castor, No. 3, bbls.** | lb. | .12½ | @ — |
| **Corn, crude, bbls.** | lb. | .11 | @ .11¼ |
| refined | lb. | .11½ | @ — |
| Chinawood, bbls. | lb. | .14¾ | @ .15 |
| Cottonseed, | | .11½ | @ .12 |
| Glycerine, drums | lb. | .18½ | @ .19 |
| Linseed, domestic | gal. | .87 | @ .90 |
| imported | gal. | .86 | @ — |
| Palm Niger | | .07½ | @ — |
| Lagos | lb. | .08 | @ — |
| Peanut, domestic, crude | lb. | .15 | @ — |
| Pine, steam distilled | gal. | .78 | @ .83 |
| Rapeseed, refined | gal. | .83½ | @ .85 |
| blown | gal. | .92 | @ .98 |
| Rosin, first rectified | gal. | .42 | @ — |
| second rectified | gal. | .44 | @ — |
| Tar, commercial | gal. | .25 | @ .29 |
| Soya Bean | | .12 | @ — |
| **Petrolatum, standard** | lb. | .05 | @ .08 |
| **dark amber** | lb. | .03⅝ | @ .03⅞ |

### *Resins and Pitches*

| | | | |
|---|---|---|---|
| **Cumar resin, hard** | lb. | .09 | @ .10 |
| **soft** | lb. | .09 | @ .10 |
| Tar Retort | bbl. | 11.00 | @12.00 |
| kiln burned | bbl. | 12.85 | @13.00 |
| Pitch, Burgundy | lb. | .05 | @ — |
| coal tar | lb. | .01½ | @ — |
| pine tar | lb. | .03 | @ — |
| Rosin, grade K | bbl. | 6.65 | @ — |
| **Shellac, fine orange** | lb. | .90 | @ — |

### *Solvents*

| | | | |
|---|---|---|---|
| **Acetone, drums** | lb. | .21 | @ — |
| **Alcohol, denatured,** | | | |
| **No. 1 bbls.** | gal. | .43 | @ .45 |
| **Benzol, 90 per cent** | gal. | .27 | @ .32 |
| **pure** | gal. | .30 | @ .35 |
| Carbon bisulphide, | lb. | .06½ | @ .07½ |
| Tetrachloride | lb. | .10 | @ .10½ |
| Dimethylaniline | lb. | .39 | @ .43 |
| **Motor gasoline,** steel bbls. | gal. | .22 | @ — |
| Naptha, V. M. & P. | gal. | .21 | @ — |
| **Toluol, pure** | gal. | .30 | @ .35 |
| Turpentine, spirits | gal. | 1.55 | @ — |
| wood | gal. | 1.45 | @ — |

### *Waxes*

| | | | |
|---|---|---|---|
| Beeswax | lb. | .45 | @ — |
| **Carnauba, No. 1** | lb. | .20 | @ — |
| Ceresin, white | lb. | .12 | @ — |
| **Bayberry** | lb. | .20 | @ .24 |
| Montan, crude | lb. | .03½ | @ .04 |
| Ozokerite, black | lb. | .18 | @ — |
| green | lb. | .26 | @ .28 |
| Paraffine | lb. | .02¾ | @ .05 |
| Sweet wax | lb. | .10 | @ .12 |

## SUBSTITUTES

| | | | |
|---|---|---|---|
| Black | lb. | .08 | @ .13 |
| White | lb. | .09 | @ .16 |
| Brown | lb. | .09 | @ .15 |
| Brown factice | lb. | .08 | @ .16 |
| White factice | lb. | .09 | @ .16 |

## VULCANIZING INGREDIENTS

| | | | |
|---|---|---|---|
| Black hyposulphite | lb. | .20 | @ .25 |
| **Sulphur chloride (jugs)** | lb. | .13½ | @ .15 |
| **" (drums)** | lb. | .08 | @ .10 |
| Sulphur flour (bbls.) | cwt. | 2.60 | @ 3.15 |
| (bags) | cwt. | 2.35 | @ 2.90 |
| Sulphur, 100 per cent pure, | | 2.60 | @ — |
| Bergenp't brand (bags) | cwt. | 2.30 | @ 2.65 |
| (bbls.) | cwt. | 2.55 | @ 2.90 |

## Changes in Chemicals and Compounding Ingredients

Below are given changes reported in the New York market for chemicals and compounding ingredients as of February 3, 1923:

*Zinc Oxide*—There was an active demand all through the period for this material and the tire manufacturers particularly were heavy buyers of the French process oxides. Orders are being booked ahead for delivery up to six months in advance. No further advance in price is expected for some time to come and quotations continue as follows: French process, red seal, barrels, car lots, 9½ cents a pound; less than car lots, 9¾ cents; green seal, car lots 10½ cents; less than car lots, 10¼ cents; white seal, car lots, 11½ cents; less than car lots, 11¾ cents. American process, lead free, barrels, car lots, 8 cents a pound; less than car lots, 8½ cents.

*Barytes*—Prime Western remained unchanged at $26 a ton, f. o. b. works, package included. Consumers continue to complain over the long delay in shipments due to the poor railroad service. Demand continues well up to the season.

*Lithopone*—This material continues to grow in popularity with the rubber makers and all the leading producers are well sold ahead. The demand continues just as heavy as before the recent advance in prices and a shortage of high grade material is predicted if consumption continues at the present pace. Considerable foreign lithopone has come into the market and is being offered at prices from 6 to 6¾ cents. Domestic quotations are as follows: Bags, 6½ cents a pound; barrels, car lots, 6½ to 6¾ cents; barrels, less than car lots, 6¾ to 7 cents.

*Litharge*—Quotations advanced one-half a cent a pound for this material and seemingly the demand continued just as heavy as before the increase. The new prices follow: Casks, 10.65 cents a pound; kegs, 100 pounds to 500 pounds, 14.25 cents; 500 to 2000 pounds, 12.82; 2000 to 10000 pounds, 12.13. Car lots, minimum 15 tons, 11.54 cents.

*Orange Mineral*—This material also was advanced one-half a cent a pound making the quotation 14.15 cents to 15.25 cents a pound. English grades moved up with the domestic to 15.25 cents. French grades are unchanged at 17 cents a pound.

*Carbon Bisulphide*—There was a good demand at 6½ to 7½ cents a pound. Imported was quoted one-quarter cent a pound lower.

*Carbon Tetrachloride*—The demand was quiet with domestic producers asking 10 to 10½ cents a pound. Imported came about 1 cent a pound lower.

*Aniline Oil*—The demand was good and prices steady. There is a shortage of raw materials but this has not resulted in any change in quotations which remain at 16½ to 17 cents a pound.

*Dimethyl-Aniline*—There were no changes in quotations of leading producers although it was said that production costs had advanced considerably. Drums brought from 41 to 43 cents per pound and tanks 39 to 41 cents.

*Caustic Soda*—Demand continues heavy and the tone of the market was very firm as a result of increased production costs. Standard brands are quoted at 3. 65 to 3.95 a hundred pounds at works.

*Soda Ash*—There was an active market for soda ash and some talk of advancing prices. At the close of the period quotations showed no changes leading producers offering light ash at $1.75 to $2.10 a hundred pounds in bags and $1.95 to $2.30 in barrels.

*Whiting*—The demand for both imported and domestic material continues good. Commercial was quoted at $1.00 a hundred pounds; gilders bolted, $1.10; American paris white, $1.25 and English cliffstone, $1.50

*Tale*—Demand was fully up to the season and prices held steady with domestic quoted at $15 to $18 a ton; French, $25 to $32.50; Italian, $47 to $58.

# Crude Rubber

NEW YORK, February 5, 1923

Since our our last report, a fortnight ago, crude has risen to over 37 cents, a figure reached during the last week in January and has now fallen to slightly over 35 cents. The above quotation is the highest reached since the middle of 1920. This represented an increase of about 200 per cent over the low of 13 cents last year.

The market to-day is strong in plantations and paras but very quiet in pontianacs and balatas. It is rumored that one of the larger brokers has been buying up any cheap lots offered and thus has held up the New York market. A break is looked for soon.

Demand was good during the last week in January when the high level was reached. Futures sold up to 39¾ cents but soon eased off slightly. Conditions as a whole have improved vastly in the last two weeks, especially as regards supply and demand. The tendency today is downward.

Quotations of this date are practically as follows:

| | | | |
|---|---|---|---|
| Plantations | | | |
| Ribbed Smoked Sheets | .35½ | @ | .35¾ |
| First Latex, spot | .35¾ | @ | — |
| February/March | .35¾ | @ | — |
| April, May, June | .36½ | @ | .36¾ |
| July/December | .37¼ | @ | — |
| **Amber Crepe No. 1, spot** | **.34¾** | **@** | **.35** |
| **Amber Crepe No. 2, spot** | **.34½** | **@** | **—** |
| Amber Crepe No. 3, spot | .34¼ | @ | .34½ |
| **Light Clean Thin Brown Crepe** | .34 | @ | — |
| **Commercially Clean Thin Brown Crepe** | .34 | @ | — |
| Specky Brown Crepe | .33½ | @ | — |
| Roll Brown Crepe, spot | .32½ | @ | — |
| Paras | | | |
| Madeira Fine | .36 | @ | — |
| Acre Fine | .34 | @ | — |
| Up-river Fine | .34 | @ | — |
| Up-river Medium | .32 | @ | — |
| Up-river Caucho Ball (shipment) | .29 | @ | — |
| Up-river Coarse | .27½ | @ | — |
| Islands Fine | .31¼ | @ | .31½ |
| **Islands Medium** | **.29¼** | **@** | **—** |
| Islands Coarse | .18¾ | @ | — |
| Cameta | .16½ | @ | — |
| Xingu Ball | .28 | @ | — |
| Tapajos Fine | .32 | @ | — |
| Tapajos Medium | .30 | @ | — |
| Pontianac | | | |
| Prime Pressed | .13½ | @ | — |
| Plantation | .07½ | @ | — |
| **Bangermassin** | **.08** | **@** | **—** |
| Siak Gutta Percha | .20¾ | @ | — |
| **Prime Macassar** | **3.00** | **@** | **—** |
| Balata | | | |
| **Surinam Sheets** | **.85** | **@** | **—** |
| Columbia Block | .60 | @ | — |
| Venezuela Block | .75 | @ | — |

# Scrap Rubber

NEW YORK, February 5, 1923.

A strong market predominates in scrap rubber to-day, some buying in small quantities being reported. One dealer reports an active market. Prices rose slightly in sympathy with crude rubber quotations. A break is expected soon.

Quotations of this date are as follows:

| | | | |
|---|---|---|---|
| **Auto tire peelings** | **.01¼** | **@** | **.01⅜** |
| Standard White auto ....ton | 25.00 | @ | 30.00 |
| Mixed auto .....ton | 13.00 | @ | 18.00 |
| Bicycle tires | .00½ | @ | .00¾ |
| Clean solid truck tires | .02 | @ | .02½ |
| Boots and shoes | .04 | @ | .04¼ |
| Arctics, trimmed | .03¼ | @ | .03¼ |
| **Arctics, untrimmed** | **.02¼** | **@** | **.02⅜** |
| Inner tubes, No. 1 | .05½ | @ | .06 |
| Inner tubes, compounded | .04¾ | @ | .05 |
| Inner tubes, red | .04¼ | @ | .04½ |
| **Battery jars, clean hard rubber** | **.01** | **@** | **.01¼** |
| Rubber Hose | .00¾ | @ | .00⅞ |
| Red packing | .01 | @ | .01¼ |
| White druggist sundries | .01¾ | @ | .02 |

# Reclaimed Rubber

NEW YORK, February 5, 1923.

The active market which has held in reclaims for the past few weeks is still maintained. Firm and active is the attitude of the trade. Friction showed the greatest advance now being quoted at about 22 cents.

Quotations of this date are about as follows:

| | | | |
|---|---|---|---|
| Standard Reclaims | | | |
| Floating | 16½ | @ | .17 |
| Friction | .22 | @ | .24 |
| Boots and Shoes | .12¼ | @ | .12½ |
| Boots and Shoes (washed) | .14½ | @ | .14¾ |
| Mechanical | .10 | @ | .11 |
| **Hose** | **.10** | **@** | **.11** |
| Tires, truck | .09 | @ | .09½ |
| Tires, auto | .10 | @ | .10½ |
| White | .13¼ | @ | .14 |

## British Manufacturers Seek Goodwill for Products

The Rubber Growers' Association of London launched a cooperative advertising program by using the first page of *The Daily Mail* (London) on January 20 to feature rubber goods for household use manufactured by member concerns. The plan is to obtain inquiries for the R.G.A. booklet describing and illustrating the various applications of rubber to household purposes.

In conjunction with this advertising, which will run for about a month in various English papers, reprints of this advertisement were issued as posters for display in retailers' shop windows.

The expenditure planned in this attempt to create a further goodwill for rubber goods is about $10,000. Further extension of the plan will depend on additional financial support from both the manufacturing and retail ends of the industry. About $150,000 in all will be needed to continue the scheme over a period of a year, the amount to be raised equally from producers and the manufacturing and distributing branches.

## New Incorporations

ARKANSAS

C. K. Matthews Tire Co., to deal in tires and tubes. $25,000. C. K. Matthews, president and treasurer; G. J. Green, secretary.

INDIANA

Majestic Rubber Company, to manufacture tires, etc. $125,000. Incorporators: Forest Van Peet, Parks G. Haynes and Howard M. Bradford.

Thomas Tire Co., to manufacture tires. $10,000. W. S. Thomas, president; G. B. Thomas, vice president; H. F. Gorham, secretary and K. W. Gant, sales manager. Principal office, 315 North Delaware street, Indianapolis, Indiana.

MASSACHUSETTS

Adams and George Co., to manufacture textile and rubber goods. $52,000. Incorporators: Joseph M. Adam, Patrick J. George and Latta Adam—all of Worcester, Massachusetts.

F. S. Carr Company, to manufacture and deal in rubber goods. $1,000. F. S. Carr, president and T. H. Dumper, treasurer; J. A. Duval, M. F. Carr—all of Massachusetts. Principal office, Boston, Massachusetts.

NEW JERSEY

Pierce-Roberts Rubber Co., to manufacture rubber goods. $100,000. Incorporators: C. A. Pierce, Glen Ridge, N. J.; H. W. Roberts and J. Roberts, Trenton, N. J.; W. Biddle, Hasbrouck Heights, N. J. Principal office, Heath and Brian avenue, Trenton, N. J.

American Tire & Supply Co., to buy and sell tires. $2500. Principal office, 323 Market street, Patterson, New Jersey.

NEW YORK

Bocor Trading Corporation, to deal in tires and tubes. $10,000. Incorporators: M. Pancorbo, A. Palacios. Attorney, C. C. Bechman, 257 Broadway, New York.

Registering Tire Valve Corporation of New York. $2,000,000. Agent, U. S. Corporation Co.

Adirondack Tire & Rubber Co. $10,000. F. E. Shook; T. J. and L. Bron,—all of Troy, New York. Attorney, W. F. Darby, Troy, New York.

Collins Stamp Mfg. Co., to make rubber stamps. $20,000. Incorporators: F. W. Collins, J. Mehrling and V. McElroy. Attorney, S. S. Ryan, 46 Cedar street, New York City.

Dunkirk Rubber Corporation. $100,000. Incorporators: C. S. Conner and F. Pell. Attorney, M. Weinstein, Buffalo. Principal office, Dunkirk, New York.

Eversongross Co., to manufacture rubber stamps. $25,000. Incorporators: A. J. Schmidt, B. F. Schmidt and A. W. Schmidt. Attorneys, Blauvelt and Warren, 61 Broadway, New York City.

OHIO

Ravanaugh Rubber Co. $5,000. Incorporator: W. Ora Drake. Principal office, Cleveland, Ohio.

Collins Tire and Rubber Co., to manufacture tires. $25,000. Incorporators: W. F. Collins, H. L. Holland and H. A. Favors. Principal office, Cuyahoga Falls, Ohio.

TENNESSEE

Tennessee Rubber Co., to deal in tires and accessories. $25,000. Incorporators: J. M. Butler, C. B. Sawyer, A. D. McKnight, W. S. Winn and V. V. Moore. Principal office, Murfeesboro, Tennessee.

CAPITAL INCREASES

Dunlop Tire & Rubber Corporation, to issue 200,000 shares of common stock, no par value.

Paramount Rubber Consolidated, Little Falls, N. J. $7,500,000 to $12,000,000.

CAPITAL REDUCTIONS

John H. Dunn Tire Co., Dallas, Texas, reducing capital from $50,000 to $30,000.

Peavey Rubber Co., Dallas, Texas, reducing capital from $100,000 to $50,000 and changing name to First State Rubber Company.

## Trade Marks Applied For

[The following are trade-mark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Marks Company, Barrister Building, Washington, D. C. or Bush Building, 130 West 42 Street, New York, trademark specialists. As an additional service feature to its readers this Journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.]

NEVERFLAT—No. 170,406. Gonzalo Ruiz, N. Y. C. For puncture filling compound for automobile and other tires.

B—No. 160,740. William and Charles Beck, Inc., Lawrence, Mass. For fabric hose.

WING FOOT—No. 170,934. The Goodyear Tire & Rubber Company, Akron, O. For rubber or composition heels and soles for boots and shoes.

## American Rubber Patents

1,441,060 Thomas R. Bullock, Providence, R. I. Billiard-Table Cushion.

1,440,961-4 Sidney M. Cadwell, Leonia, N. J., assignor to The Naugatuck Chemical Co., a Corporation of Connecticut. Process for Vulcanizing Rubber and Products Obtained Thereby.

1,440,371 Glenn B. Britton, Akron, Ohio, assignor to The Firestone Tire and Rubber Co., Akron, Ohio. Process and Apparatus for Treating Rubber.

1,440,974 William H. Dornburgh, Schenectady, N. Y. Tire.

61,754 Horace Hillyard Hastings, Toronto, Ontario, Canada. Tire.

1,441,004 Harry Wm. Kranz, Cleveland, Ohio, assignor to The Hydraulic Steel Co., Cleveland, Ohio. Tire Base and Method of Making Same.

1,441,176 Emery M. Sabin, Kantner, Pa. Self-Vulcanizing Boot for Tire Casings.

1,440,495 Forest A. Richards and Chester M. Shogren, Eau Claire, Wis., assignors to Gillette Rubber Co., a Corporation of Wisconsin. Collapsible Tire Core.

1,440,860 Henry Clay Babel, Buffalo, N. Y. Inner Tube for Tires.

1,440,699 Daniel M. Rothenberger, Leesport, Pa., assignor of one third to William M. Fryermuth and one third to Ephraim P. Wanner, both of Reading, Pa. Resilient Tire.

1,440,397 Robert McClenathen and Harry G. Arthur, Akron, Ohio, assignor to Kelly-Springfield Tire Co., Akron, Ohio, a Corporation of New Jersey. Tire Trimmer.

15,518 Fred A. Schwartz, Coshocton, Ohio. Mold for Pneumatic Tire Tubes.

1,441,134 Peter Theisen and Franz Theisen, Elberfeld, Germany. Vehicle Wheel with Pneumatic Tire.

1,440,553 Henry C. Privett, Long Beach, Calif., assignor of one half to Charles R. Privett, Burbank, Calif., three-sixteenths to Helen E. Privett, and one-sixteenth to Hollis F. Privett, both of Long Beach, Calif. Puncture Closing Inner Tube for Pneumatic Tires.

1,440,455 William E. Gardner, Pittsburgh, Pa. Vulcanizing Composition and Method of Making the Same.

1,441,079 Claude Davis Grady, Sturgis, Ky., assignor of one-half to Emmett E. Wallace, Sturgis, Ky. Inner Tube Testing Device.

GRANTED FOR JAN. 16, 1923

1,422,047 Vehicle Wheel. Minor E. Chamberlain, St. Louis, Mo.

1,422,073 Tire. Sadagiro Kawanishi, Tokyo, Japan.

1,422,182 Safety and Signaling Device for Pneumatic Tires. Alfred C. Sloan, Philadelphia, Pa.

1,442,218 Rubber Bale. Ernest Hopkinson, New York.

1,422,226 Vulcanizing Valve. Henry P. Kraft, Ridgewood, N. J.

1,442,229 Fountain-Syringe Bag. Howard H. McGee, Waterbury, Conn., assignor to the Goodyear's India Rubber Glove Mfg. Co., a Corporation of Connecticut.

1,442,242 Motor-Cycle-Wheel Structure. Harry N. Atwood, Smithfield, N. C., assignor to Rubwood, Inc., Lawrence, Mass.

1,442,285 Spare-Tire Holder for Automobiles. William H. McKay and Edward E. Doering, Muskogee, Okla.

1,442,293 Tire Casing. Fred B. Pfeiffer, Akron, Ohio, assignor to The Star Rubber Co. Inc., Akron, Ohio.

1,442,374 Pair of Suspenders. John T. Watts, Los Angeles, Calif.

1,422,394 Protective Cover for Pneumatic Tires and the Like. Nicolas Jeranio, Rosario de Santa Fe, Argentina.

1,442,407 Protective Inner Liner for Pneumatic Tires. Benjamin Hirsch, Leominster, Mass.

1,442,409 Demountable Vehicle Wheel Rim. Frank F. Hultgreen, Santa Rosa, Calif., assignor of one-third to Fred Peterson, Santa Rosa, Calif.

1,442,436 Pneumatic Tire. William Margraf, Brooklyn, N. Y.

1,442,437 Process of Galvanizing Wheel Rims. Lewis V. Mather. Detroit, Mich.

1,442,442 Vehicle Wheel. Alden L. Putnam, Detroit, Mich., assignor, by mesne assignments, to Detroit Pressed Steel Co., Wilmington, Del.

1,442,518 Process of Making Pneumatic Crutch Pads. Joseph H. Bowers, San Francisco, Calif.

1,442,519 Tire Remover. Maurice Peter Breon, Newport News, Va., assignor to Cora L. Breon, Newport News, Va.

1,442,594 Container for Rubber Tires. James E. Allen, Highland Park, Ill.

1,442,603 Vehicle Wheel. Harry M. Coates, Detroit, Mich.

1,442,612 Solid-Tire-Grooving Machine. Albert Hargraves, Akron, Ohio, assignor to The Firestone Tire and Rubber Co., Akron, Ohio.

1,442,649 Device for Setting and Removing Tires. Albino Cattoni, Bradford, Pa.

1,442,653 Machine for Building Cylindrical Tire Blanks. Barthold De Mattia, Clifton, N. J.

1,442,722 Tire Protector. Angelo Grilli, Milwaukee, Wis.

1,442,746 Swimming Appliance. Paul J. Timberlake, Jackson, Mich.

1,442,748 Hoof Pad. Brooks M. Trauger, Scranton, Pa.

1,442,767 Rubbing Apron for Carding Machines. Thomas H. Hunter and George W. Hunter, Philadelphia, Pa.

DESIGNS

61,797 Tire. Frank E. Bessler, Akron, Ohio. Serial No. 378,695. Term of patent 3½ years.

## Syracuse Developments

Following a petition by the receiver, the federal court appointed three appraisers to value the property of the Syracuse Rubber Co., Syracuse, N. Y. Sanderson & Porter, New York, valued the building and equipment at $455,530.

Latest developments show that the first step in the reorganization of Syracuse has been taken in the incorporation of the Syra-cord Tire and Rubber Co. It is proposed that this new concern will take over the business of the bankrupt company when it is put up for sale on February 15.

Capitalization of the new company is to consist of $300,000 first mortgage 7% convertible bonds, due in 1938, of which $140,000 will be issued in exchange for first mortgage bonds of the old company; $1,000,000 participating preferred stock, par $10, and 50,000 shares of no par common stock.

## New Motorcycle Tire

A new design in motorcycle tires has been perfected by the Dunlop Rubber Co. in England, which is said to mark a decided advance in construction of this type. It is a cord casing with a new and distinctive tread pattern, the studs being of a rectangular oblong shape.

## Woman Truck Tire "Salesman"

The Boston branch of the Firestone Tire & Rubber Co. lays claim to the only woman solid tire sales person in the United States. She is Miss Mildred D. Hanson, daughter of Forrest J. Hanson, tire dealer in Haverhill, Mass.

Miss Hanson decided she wanted to be a travelling salesman a short time ago and, despite the discouragement to this plan offered by her father, set out to sell the most difficult prospect in the territory. Much to Mr. Hanson's surprise she took a good sized order and since then has been regularly on the payroll.